

# Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 49903202

**Data Requirement:** PMRA Data Code: 9.8.4 (TGAI) or 9.8.6 (EP)  
EPA DP Barcode:  
OECD Data Point: IIA 8.12 (TGAI) and IIIA 10.8.1.1 (EP)  
EPA Guideline: 850.4150

**Test material:** 2,4-D Choline Salt  
                          Glyphosate Dimethylammonium      **Purity:** 24.1%  
                          Purity: 21.7%

Common name:  
Chemical name: IUPAC:  
                          CAS name:  
                          CAS No.:  
Synonyms: GF-2726, TSN306327

**Primary Reviewer:** Teresa Nelis  
Senior Scientist, CDM Smith

Signature: *Teresa Nelis*  
Date: 6/13/16

**Secondary Reviewer:** Teri S. Myers  
Senior Scientist, CDM Smith

Signature: *Teri S. Myers*  
Date: 6/20/16

**Primary Reviewer:** Edward Odenkirchen, Ph.D./EPA  
EPA/OPP/EFED

Date: 08/01/2016 *Edward Odenkirchen*

**Secondary Reviewer(s):** Kristina Garber/EPA  
EPA/OPP/EFED

Date: 8/11/2016 *Kristina Garber*

**Reference/Submission No.:** {.....}

**Company Code** {.....} [For PMRA]  
**Active Code** {.....} [For PMRA]  
**Use Site Category:** {.....} [For PMRA]  
**EPA PC Code:** 051505 (2,4-D Choline Salt)  
                          103608 (Glyphosate DMA)

**Date Evaluation Completed:** 08/12/2016

**CITATION:** Bergfield, A. 2016. GF-2726 (2,4-D Choline Salt, 286 g a.s./L; Glyphosate Dimethylammonium 260 g a.s./L; SL): Effects on the Vegetative Vigor of Non-Target Terrestrial Plants (Tier II). Unpublished study performed by ABC Laboratories, Columbia, Missouri, and sponsored by Dow AgroSciences LLC, Indianapolis, Indiana. ABC Study No. 83626; Dow AgroSciences Study No. 160303. Study completed April 28, 2016.

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## EXECUTIVE SUMMARY:

The effect of **GF-2726 (2,4-D Choline Salt + Glyphosate Dimethylammonium)** on the vegetative vigor of monocot (Corn, *Zea mays*; Oat, *Avena sativa*; Onion, *Allium cepa*; Sorghum, *Sorghum bicolor*; and Wheat, *Triticum aestivum*) and dicot (Buckwheat, *Fagopyrum esculentum*; Cabbage, *Brassica oleracea*; Cucumber, *Cucumis sativus*; Mustard, *Sinapis alba*; Oilseed rape, *Brassica napus*; Radish, *Raphanus sativus*; Soybean, *Glycine max*; Sugarbeet, *Beta vulgaris*; Sunflower, *Helianthus annuus*; and Tomato, *Lycopersicon esculentum*) crops was studied. Nominal concentrations for all species were 0 (negative control), 0.00138, 0.0027, 0.0055, 0.0110, 0.0221, 0.044, 0.088, 0.176, 0.35, 0.71, and 1.41 lb 2,4-D Choline Salt/A, and were 0 (negative control), 0.00124, 0.0025, 0.0050, 0.0099, 0.0199, 0.040, 0.079, 0.159, 0.32, 0.64, and 1.27 lb Glyphosate DMA/A. Measured concentrations, used in analyses for the three highest treatment levels, for cabbage, cucumber, mustard, oilseed rape, onion, radish, sugarbeet, and tomato were 0.37, 0.73, and 1.46 lb 2,4-D Choline Salt/A; and for the three highest treatment levels for buckwheat, corn, oat, sorghum, soybean, sunflower and wheat were 0.35, 0.71, and 1.42 lb 2,4-D Choline Salt/A. Glyphosate DMA concentrations were not confirmed analytically.

The growth medium used in the vegetative vigor test was a top soil silica sand mix (sandy loam, pH 6.4, organic carbon 1.5%). On day 21 the surviving plants per pot were recorded and cut at soil level for measuring the plant height and dry weight.

Significant inhibitions in survival were observed in all species except corn and onion compared to the negative control, and survival in the negative control was 97 to 100%. Complete mortality, 100% mortality, was observed at the highest one to three treatment levels for cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Significant inhibitions in radish survival were 33, 57, 97, 100 and 100%, and in tomato survival were 33, 97, 100, 100 and 100%, at the 0.088, 0.176, 0.37, 0.73 and 1.46 lb 2,4-D Choline Salt/A treatment levels, respectively (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ). Significant inhibitions in cabbage survival were 3, 3, 23 and 83%, mustard survival were 13, 33, 83 and 67%, oilseed rape survival were 20, 23, 77, and 100%, sugarbeet survival were 33, 93, 100 and 100%, sunflower survival were 70, 100, 100 and 100%, and wheat survival were 60, 77, 100 and 100%, at the 0.176, 0.35, 0.71 and 1.42/1.46 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ). Cucumber significant inhibitions in survival were 81, 100 and 100%, oat survival were 7, 10, and 80%, sorghum survival were 14, 100 and 100%, and soybean survival were 3, 57 and 100%, at the 0.37, 0.73 and 1.42/1.46 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ). Significant decreases in buckwheat survival were 30% at the highest concentration tested, 1.42 lb 2,4-D Choline Salt/A (Mann-Whitney U Two-Sample test,  $p<0.05$ ).

Significant inhibitions in seedling height compared to the negative control were found in all species tested. Significant inhibitions in cucumber height of 12 to 92% were observed from the 0.0027 to the 0.37 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ); there was 100% mortality at the two highest treatment levels. Significant inhibitions in mustard height were 16 to 83% from the 0.011 to the 1.46 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ). Significant inhibitions in sunflower height measured 10, 31, 62, and 75% at the 0.0221, 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels, respectively (Williams test,  $p<0.05$ ); there was 100% mortality at the three highest treatment levels. Significant inhibitions in radish were 14 to 50% over the 0.0221 to the 0.37 lb 2,4-D Choline Salt/A treatment range, respectively (Dunnett's test,  $p<0.05$ ); there was 100% mortality at the two highest treatment levels. For sugarbeet, significant height inhibitions were 9, 17, 44, and 41% at the 0.044, 0.088, 0.176, and 0.37 lb 2,4-D Choline Salt/A treatment levels, respectively; there was 100% mortality at the two highest treatment levels (Williams test,  $p<0.05$ ). Oilseed rape significant inhibitions in height were 12 to 63% from the 0.044 to the 0.73 lb 2,4-D Choline Salt/A treatment level (Williams test,  $p<0.05$ ), and buckwheat significant inhibitions in height were 34 to 78%, from the 0.044 to the 1.42 lb ai/A treatment level (Jonckheere-Terpstra Step-Down test,  $p<0.05$ ); there was 100% mortality at the highest treatment level for oilseed rape.

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Significant inhibitions in tomato height were 69, 82, and 88% at the 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels, respectively (Williams test, p<0.05); there was 100% mortality at the three highest treatment levels. Significant decrease in cabbage height measured 32 to 67% from the 0.088 to the 1.46 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra Step-Down test, p<0.05). Wheat height significant inhibitions were 36, 44, and 42% at the 0.088, 0.176, and 0.35 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant decreases in soybean height of 19, 46 and 70% at the 0.176, 0.35, and 0.71 lb Choline Salt/A treatment levels, respectively, were observed (Williams test, p<0.05); there was 100% mortality at the highest treatment level. Corn significant inhibitions in height were 29, 76 and 74% at the 0.35, 0.71, and 1.42 lb Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Sorghum significant inhibition in height of 69% was found at 0.35 lb Choline Salt/A (Dunnett's test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant height inhibitions in onion of 32%, and in oat of 54 and 58%, were observed at the one to two highest treatment levels, 0.71 and 1.42/1.46 lb 2,4-D Choline Salt/A, respectively (Jonckheere-Terpstra Step-Down test, p<0.05).

Significant inhibitions in seedling dry weight compared to the negative control were also found in all species tested compared to the negative control. There were significant inhibitions in cabbage of 15 to 93% from the 0.0055 to the 1.46 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra Step-Down test, p<0.05). Cucumber significant inhibitions in dry weight were 10 to 86% from the 0.011 to the 0.37 lb ai/A treatment level (Williams test, p<0.05); 100% mortality at the two highest treatment levels. Significant inhibitions in tomato dry weight were 12 to 96% from the 0.011 to the 0.176 lb 2,4-D Choline Salt/A treatment level (Williams test, p<0.05); 100% mortality at the three highest treatment levels. Radish dry weight significant inhibitions measured 17 to 92% from the 0.0221 to the 0.37 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant inhibitions in buckwheat and mustard dry weight were 21 to 86%, and 31 to 91%, respectively, from the 0.0221 to the 1.42/1.46 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra Step-Down test, p<0.05). Sugarbeet significant inhibitions in dry weight of 16 to 89% were observed from the 0.0221 to the 0.35 lb 2,4-D Choline Salt/A treatment level (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. Soybean significant inhibitions of 9 to 87% from the 0.044 to the 0.71 lb 2,4-D Choline Salt/A treatment (Williams test, p<0.05) were observed; 100% mortality at the highest treatment level. Sunflower significant inhibitions were 41, 80 and 89% were found at the 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels (Jonckheere-Terpstra Step-Down test, p<0.05); 100% mortality at the three highest treatment levels. Significant inhibitions in oilseed rape dry weight were 55, 76, 89, and 93% at the 0.088, 0.176, 0.37 and 0.73 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05); there was 100% mortality at the highest treatment level. Significant inhibitions in wheat dry weight were 53, 47, and 58% at the 0.088, 0.176, and 0.35 lb 2,4-D Choline Salt/A treatment levels, respectively (Jonckheere-Terpstra Step-Down test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant decreases in oat dry weight were 31, 79, and 56%, and corn dry weight were 61, 91, and 89% at the 0.35, 0.71 and 1.42 lb 2,4-D Choline Salt/A treatment levels, respectively (Dunnett's test and Jonckheere-Terpstra Step-Down test, p<0.05, respectively). Significant inhibition in sorghum dry weight was 78% at the 0.35 lb ai/A treatment level (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant inhibitions in onion dry weight were 56 and 77% at the 0.73 and 1.46 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

The most sensitive monocot was wheat based on dry weight with NOAEC and IC<sub>25</sub> values of 0.044 and 0.0711 lb 2,4-D Choline Salt/A, respectively. The most sensitive dicot was tomato based on dry weight with NOAEC and IC<sub>25</sub> values of 0.011 and 0.0145 lb 2,4-D Choline Salt/A, respectively.

In terms of Glyphosate DMA, the most sensitive monocot wheat based on dry weight with NOAEC and IC<sub>25</sub> values of 0.00396 and 0.0640 lb Glyphosate DMA/A, respectively. The most sensitive dicot was tomato based on dry weight with NOAEC and IC<sub>25</sub> values of 0.0099 and 0.013 lb Glyphosate DMA/A, respectively. In terms of Total Product GF-2726, the most sensitive monocot was wheat based on dry weight with NOAEC and IC<sub>25</sub> values of 0.1826 and 0.295 lb Total Product/A, respectively. The most sensitive dicot was tomato based on dry weight with

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NOAEC and IC<sub>25</sub> values of 0.0456 and 0.0602 lb Total Product/A, respectively.

There were moderate phytotoxic effects in onion (40-60), but severe to complete effects in all other species tested. Severe effects (70-100) were observed in buckwheat, cabbage, corn, mustard, and oat; complete mortality at the higher concentrations (100) were observed in cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Phytotoxic effects were dose-related in all species tested.

**Maximum Labeled Rate:** Not reported

## Results Synopsis

### 2,4-D Choline Salt Monocot

#### Most sensitive monocot: Wheat based on dry weight

|   |                                 |
|---|---------------------------------|
| EC <sub>50</sub> /IC <sub>50</sub> : 0.0873 lb ai/A | 95% C.I.: 0.0828-0.0921 lb ai/A |
| EC <sub>25</sub> /IC <sub>25</sub> : 0.0711 lb ai/A | 95% C.I.: N/A-0.0918 lb ai/A    |
| EC <sub>05</sub> /IC <sub>05</sub> : 0.0528 lb ai/A | 95% C.I.: N/A-0.0735 lb ai/A    |
| NOEC: 0.044 lb ai/A                                 |                                 |
| Slope: N/A  | 95% C.I.: N/A                   |

### Dicot

#### Most sensitive dicot: Tomato based on dry weight

|  |                                   |
|--|-----------------------------------|
| EC <sub>50</sub> /IC <sub>50</sub> : 0.0238 lb ai/A  | 95% C.I.: 0.0217-0.026 lb ai/A    |
| EC <sub>25</sub> /IC <sub>25</sub> : 0.0145 lb ai/A  | 95% C.I.: 0.0125-0.0164 lb ai/A   |
| EC <sub>05</sub> /IC <sub>05</sub> : 0.00711 lb ai/A | 95% C.I.: 0.00413-0.00894 lb ai/A |
| NOEC: 0.011 lb ai/A                                  |                                   |

**Table 1 (Tier II studies). Summary of most sensitive parameters by species (lb 2,4-D Choline Salt/A).**

| Species      | Endpoint   | NOEC   | EC <sub>05</sub> /IC <sub>05</sub> | EC <sub>25</sub> /IC <sub>25</sub> | EC <sub>50</sub> /IC <sub>50</sub> |
|--------------|------------|--------|------------------------------------|------------------------------------|------------------------------------|
| Buckwheat    | Dry weight | 0.011  | 0.00603                            | 0.0291                             | 0.0868                             |
| Cabbage      | Dry weight | 0.0027 | 0.0155                             | 0.0444                             | 0.0924                             |
| Corn#        | Dry weight | 0.176  | 0.0644                             | 0.161                              | 0.304                              |
| Cucumber     | Dry weight | 0.0055 | 0.0179                             | 0.052                              | 0.109                              |
| Mustard      | Height     | 0.0055 | 0.00397                            | 0.0157                             | 0.0408                             |
| Oat#         | Dry weight | 0.088  | 0.172                              | 0.301                              | 0.445                              |
| Oilseed rape | Dry weight | 0.0221 | 0.0312                             | 0.056                              | 0.0842                             |
| Onion#       | Dry weight | 0.37   | 0.112                              | 0.304                              | 0.607                              |
| Radish       | Dry weight | 0.011  | 0.0105                             | 0.0234                             | 0.0411                             |
| Sorghum      | Height     | 0.176  | 0.287                              | 0.314                              | 0.335                              |
| Soybean      | Dry weight | 0.0221 | 0.0617                             | 0.141                              | 0.25                               |
| Sugarbeet    | Dry weight | 0.011  | 0.009                              | 0.0324                             | 0.0789                             |
| Sunflower    | Dry weight | 0.011  | 0.0175                             | 0.0329                             | 0.0512                             |
| Tomato       | Dry weight | 0.011  | 0.00711                            | 0.0145                             | 0.0238                             |
| Wheat        | Dry weight | 0.044  | 0.0528                             | 0.0711                             | 0.0873                             |

# Jonckheere-Terpstra Step-Down test run for trends analysis; CETIS was unable to run the Williams test on more than 10 treatment levels.

This study is scientifically sound and is classified acceptable.

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## I. MATERIALS AND METHODS

### GUIDELINE FOLLOWED:

This study was conducted in compliance with OCSPP Guideline 850.4150: Vegetative Vigor (January 2012). The reviewer evaluated the study methods according to EPA Ecological Effects Test Guidelines, OCSPP Guideline 850.4150: Vegetative Vigor. There were some deficiency and deviations noted by the reviewer.

1. Complete mortality at the higher concentrations were observed in cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Vegetative vigor studies are intended to capture sub-lethal effects, and morality at the higher treatment levels may have confounded growth effects.
2. Relative humidity for buckwheat, corn, oat, sorghum, soybean, sunflower and wheat was an average 45%, including a range of average humidity of 31 to 67% during the day, which is less than the EPA recommended range of  $70\pm15\%$  during light periods.
3. The physico-chemical properties of the test material were not reported.

The deficiency and deviations did not have an impact on the acceptability of this study.

### COMPLIANCE:

Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided. This study was conducted in compliance with USEPA Good Laboratory Practice Standards (40 CFR, Part 160, 1989), with the following exceptions: the latest water characterizations performed in June 2015, and the photographic data of test plants, were not collected in accordance with the stated GLP.

## A. MATERIALS:

### 1. Test Material

**GF-2726 (2,4-D Choline Salt + Glyphosate Dimethylammonium)**

### Description:

Solid

### Lot No./Batch No.:

2C01163R01

### Purity:

2,4-D Choline Salt: 24.1%  
Glyphosate DMA: 21.7%

### Stability of compound under test conditions:

Analytical determinations for buckwheat, corn, oat, sorghum, soybean, sunflower and wheat based on measured concentration of the three highest test concentrations in the initial spray solution yielded recoveries of 98-102% of nominal ( $n = 6$ ). Analytical determinations based on measured concentration of the three highest test concentrations in the post application spray solution yielded recoveries of 99-101% of nominal ( $n = 6$ ). Analytical determinations for cabbage, cucumber, mustard, oilseed rape, onion, radish sugarbeet, and tomato based on measured concentration of the three highest test concentrations in the initial spray solution yielded recoveries of 99-100% of nominal ( $n = 6$ ). Analytical determinations based on measured

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concentration of the three highest test concentrations in the post application spray solution yielded recoveries of 98-103% of nominal (n = 6). The comparability between pre- and post-application spray solutions indicates the test substance was stable over the treatment period.

(OECD recommends chemical stability in water and light)

**Storage conditions of test chemicals:**

The test material was stored at room temperature.

**Table 2. Physical/chemical properties of GF-2726.**

| Parameter                | Values       | Comments |
|--------------------------|--------------|----------|
| Water solubility at 20°C | Not reported |          |
| Vapor pressure           | Not reported |          |
| UV absorption            | Not reported |          |
| pKa                      | Not reported |          |
| Kow                      | Not reported |          |

## 2. Test organism:

**Monocotyledonous species:** Corn (*Zea mays*, Poaceae; G05T82), Onion (*Allium cepa*, Amaryllidaceae; Yellow Granex Hybrid 33), Oat (*Avena sativa*, Gramineae; Cayuse), Sorghum (Sorghum bicolor, Poaceae; GSWNA51DR), and Wheat (*Triticum aestivum*, Poaceae; Triple 4); EPA recommends four monocots in two families, including corn.

**Dicotyledonous species:** Buckwheat (*Fagopyrum esculentum*, Polygonaceae; Common (OG)), Cabbage (*Brassica oleracea*, Brassicaceae; Copenhagen Market), Cucumber (*Cucumis sativus*, Cucurbitaceae; Straight Eight); Mustard (*Sinapis alba*, Brassicaceae; White Mustard), Oilseed rape (*Brassica napus*, Brassicaceae; Dwarf Essex); Radish (*Raphanus sativus*, Brassicaceae; Crimson Giant), Soybean (*Glycine max*, Leguminosae; Williams 82), Sugarbeet (*Beta vulgaris*, Chenopodiaceae; Western Sugar), Sunflower (*Helianthus annuus*, Compositeae; Royal Hybrid 1121F1), and Tomato (*Lycopersicon esculentum*, Solanaceae; Beef Steak); EPA recommends six dicots in four families, including soybean and a root crop.

OECD recommends a minimum of three species selected for testing, at least one from each of the following categories: Category 1: ryegrass, rice, oat, wheat, and sorghum; Category 2: mustard, rape, radish, turnip, and Chinese cabbage; Category 3: vetch, mung bean, red clover, fenugreek, lettuce, and cress.

**Seed source:** Corn and sorghum obtained from Syngenta Seed Care; oat and wheat obtained from L.A. Hearne Seed Co.; onion obtained from Park Seed Co.; cucumber obtained from NE Seed; buckwheat, mustard, oilseed rape, and sunflower obtained from Johnny's Selected Seeds; soybean obtained from Missouri Foundation Seeds; sugarbeet obtained from Morgan Country Seeds; and cabbage, radish and tomato obtained from Sustainable Seed Co.

**Prior seed treatment/sterilization:** The seeds were not treated with any type of fungicides, insecticides, or any pesticides.

**Historical % germination of seed:** Corn, 100%; oat, 97%; onion , 91%; sorghum, 96%; wheat, 88%; buckwheat, 91%; cabbage, 89%; cucumber, 90%; mustard, 90%; oilseed rape, 95%; radish, 80%; soybean, 89%; sugarbeet, 85%; sunflower, 94%; and tomato, 93%.

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Seed storage, if any: Not reported.

## B. STUDY DESIGN:

### 1. Experimental Conditions

- a. Limit test: None.
- b. Range-finding study: None.
- c. Definitive Study

**Table 3: Experimental Parameters - Vegetative vigor.**

| Parameters   | Vegetative vigor                                      |  |
|--|---|--|
|  | Details   | Remarks  |
|  | <i>Criteria</i>                                       |  |
| Duration of the test   | 21 days   | <p><i>Recommended test duration is 14-21 days.</i></p> <p><i>OECD recommends that the test be terminated no sooner than 14 days after 50 percent of the control seedlings have emerged</i></p> |
| Number of seeds/plants/species/replicate                                 | 5 seeds per pot, except cucumber had 6 seeds per pot. | <p><i>Five plants per replicate are recommended.</i></p>   |
| <u>Number of replicates</u><br>Control:<br>Adjuvant control:<br>Treated: | 6<br>N/A<br>6   | <p><i>Four replicates per dose should be used.</i></p> <p><i>OECD recommends a minimum of four replicates per treatment</i></p>  |

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| Parameters   | Vegetative vigor  |  |
|--|---|--|
|  | Details   | Remarks  |
|  | <i>Criteria</i>   |  |
| <u>Test concentrations (lb ai/A)</u><br>Nominal:<br><br>Measured:                  | 0 (negative control), 0.00138, 0.0027, 0.0055, 0.0110, 0.0221, 0.044, 0.088, 0.176, 0.35, 0.71, and 1.41 lb 2,4-D Choline Salt/A<br><br>Three highest test concentrations:<br><u>Onion, cabbage, cucumber, mustard, oilseed rape, radish, sugarbeet and tomato:</u><br>0.37, 0.73, and 1.46 lb 2,4-D Choline Salt/A.<br><br><u>Corn, oat, grain sorghum, wheat, buckwheat, soybean, and sunflower:</u><br>0.35, 0.71, and 1.42 lb 2,4-D Choline Salt/A. | Nominal concentrations for Glyphosate DMA: 0 (negative control), 0.00124, 0.0025, 0.0050, 0.0099, 0.0199, 0.040, 0.079, 0.159, 0.32, 0.64, and 1.27 lb Glyphosate DMA/A<br><br>Nominal concentrations for GF-2726 product: 0.00572, 0.0114, 0.0229, 0.0457, 0.0915, 0.183, 0.366, 0.732, 1.46, 2.93, and 5.85 lb product/A.<br><br><i>Five test concentrations should be used with a dose range of 2X or 3X progression</i><br><br><i>OECD recommends three concentrations, preferably with application rates equivalent to 0.0 (control), 1.0, 10.0 and 100 mg substance per kg of oven-dried soil.</i> |
| <u>Method and interval of analytical verification</u><br><br>LOQ:<br><br>LOD:      | Spray solutions were analyzed by HPLC using a Waters Symmetry C18 column.<br><br>0.0184-0.0191 lb 2,4-D Choline Salt/A (MQL)<br><br>Not reported.   | 2,4-D acid, the acid equivalent active ingredient of GF-2726, was measured in the spray solutions, and converted to 2,4-D Choline Salt concentrations.   |
| Adjuvant (type, percentage, if used)   | N/A   |  |
| <u>Test container (pot)</u><br>Size/Volume<br><br>Material:<br>(glass/polystyrene) | Pots with top diameter of 16.5 cm x bottom diameter of 12.2 cm x 11.5 cm depth.<br>Plastic  | <i>Non-porous containers should be used.</i><br><br><i>OECD recommends that non-porous plastic or glazed pot be used.</i>  |
| Growth facility  | Greenhouse  |  |
| Method/depth of seeding  | Corn, oat, cucumber, soybean, and sunflower planted at 20 mm depth; onion, cabbage, mustard, oilseed rape, and tomato planted at 6 cm depth; sorghum, wheat, buckwheat, and radish at 12 mm   |  |

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| Parameters  | Vegetative vigor   |   |
|---|--|---|
|   | Details  | Remarks   |
|   |  | Criteria  |
|   | depth.   |   |
| <u>Test material application</u><br>Application time including the plant growth stage   | Application was made at the 2-4 leaf stage.  |   |
| Number of applications  | 1  |   |
| Application interval  | N/A- single application  |   |
| Method of application   | Application of the test substance was made using an overhead track sprayer (De Vries) equipped with a TeeJet 4002E nozzle operated at 40 psi, approximately 27 inches above the soil surface (140 L/ha nominal spray volume) |   |
| <u>Details of soil used</u><br>Geographic location<br>Depth of soil collection<br>Soil texture<br>% sand<br>% silt<br>% clay<br>pH:<br>% organic carbon<br>CEC<br>Moisture at 1/3 atm (%) | Lime Spring, Iowa<br>N/A<br>Sandy loam<br>71<br>18<br>11<br>6.4<br>1.5%<br>11.0 meq/100g<br>13.9%  | Top soil mixed with silica sand.<br>Organic Matter: 2.5%<br><br><i>Soil mixes containing sandy loam, loam, or clay loam soil with no greater than 2% organic matter are preferable. Glass beads, rock wool, and 100% acid washed sand are not preferred.</i><br><br><i>OECD prefers the soil to be sieved (0.5 cm) to remove coarse fragments. Carbon content should not exceed 1.5% (3% organic matter). Fine particles (under 20um) makeup should be between 10 and 20%. The recommended pH is between 5.0 and 7.5.</i> |
| Details of nutrient medium, if used   | N/A  |   |
| <u>Watering regime and schedules</u><br>Water source/type:<br>Volume applied:<br>Interval of application:<br>Method of application:   | Top watered once post-application, then sub-irrigation.<br>Well water.<br>Not reported.<br>Daily.<br>The plants were bottom watered daily as needed.   | <br><br><i>EPA prefers that bottom watering be utilized for vegetative vigor studies so that the chemical is not leached out of the soil during the test.</i>   |
| Any pest control method/fertilization, if used  | Peter's 20-20-20 (1/2 tablespoon/gallon). Applied once   |   |

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| Parameters  | Vegetative vigor   |   |
|---|--|---|
|   | Details  | Remarks   |
|   |  | Criteria  |
|   | via sub-irrigation to all species.   |   |
| Test conditions   | <u>Corn, oat, grain sorghum, wheat, buckwheat, soybean, and sunflower:</u><br>Temperature:<br>Photoperiod:<br><br>Light intensity and quality:<br><br>Relative humidity:     |   |
|   | <u>Cabbage, cucumber, mustard, oilseed rape, radish, sugarbeet and tomato:</u><br>Temperature:<br>Photoperiod:<br><br>Light intensity and quality:<br><br>Relative humidity: |   |
|   | <u>Onion:</u><br>Temperature:<br>Photoperiod:<br><br>Light intensity and quality:<br><br>Relative humidity:  | <i>EPA prefers that the cold vs warm loving plants be tested in two separate groups to optimize plant growth.</i><br><br><i>OECD prefers that the temperature, humidity and light conditions be suitable for maintaining normal growth of each species for the test period.</i> |
| <u>Reference chemical (if used)</u><br>Name:<br>Concentrations: | N/A  |   |
| Other parameters, if any  | None   |   |

**2. Observations:**

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Table 4: Observation Parameters - Vegetative vigor.

| Parameters   | Vegetative vigor   |                                     |
|--|--|-------------------------------------|
|  | Details  | Remarks                             |
| Parameters measured (e.g., number of germinated seeds, emerged seedlings, plant height, dry weight or other endpoints) | - Survival<br>- Shoot height<br>- Total dry weight<br>- Phytotoxicity  |                                     |
| Measurement technique for each parameter   | Phytotoxicity was visually determined. Survival was defined as the percent of emerged. Height was measured from the base of the stem to the tip of the longest leaf or apical bud. Total replicate weight was determined following drying. |                                     |
| Observation intervals  | Each pot was inspected weekly, and phytotoxicity assessments performed. Plant height and dry weight were recorded at study termination.  |                                     |
| Other observations, if any   | N/A  |                                     |
| Were raw data included?  | Yes  |                                     |
| Phytotoxicity rating system, if used   | No effect, 1-10, no effect; 20-30, slight effect; 40-60, moderate effect; 70-100, severe effect; 100, complete effect.   | Frans, R.E. and R.E. Talbert, 1977. |

**II. RESULTS and DISCUSSION:**

**A. INHIBITORY EFFECTS:**

**1. Vegetative vigor:**

Study author found seedling survival in the negative control was 97 to 100%. The study author reported significant inhibitions for survival in all species except corn and onion compared to the negative control; the amount of inhibitions compared to the negative control were not reported. Significant inhibitions in tomato survival were found at the 0.088, 0.176, 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels (Cochran-Armitage test, p<0.05). Significant inhibitions in survival of mustard, oilseed rape, radish, sugarbeet, sunflower, and wheat were found at the 0.176, 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels (Cochran-Armitage test, p<0.05). Significant inhibitions in cabbage, cucumber, oat and

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sorghum were observed at the 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels (Cochran-Armitage test, p<0.05). Buckwheat and soybean significant inhibitions in survival were found at the 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels (Cochran-Armitage test, p<0.05).

The reviewer also found significant inhibitions in survival in all species except corn and onion compared to the negative control, and survival in the negative control was 97 to 100%. Complete mortality, 100% mortality, was observed at the highest one to three treatment levels for cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Significant inhibitions in radish survival were 33, 57, 97, 100 and 100%, and in tomato survival were 33, 97, 100, 100 and 100%, at the 0.088, 0.176, 0.37, 0.73 and 1.46 lb 2,4-D Choline Salt/A treatment levels, respectively (Jonckheere-Terpstra Step-Down test, p<0.05). Significant inhibitions in cabbage survival were 3, 3, 23 and 83%, mustard survival were 13, 33, 83 and 67%, oilseed rape survival were 20, 23, 77, and 100%, sugarbeet survival were 33, 93, 100 and 100%, sunflower survival were 70, 100, 100 and 100%, and wheat survival were 60, 77, 100 and 100%, at the 0.176, 0.35, 0.71 and 1.42/1.46 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Cucumber significant inhibitions in survival were 81, 100 and 100%, oat significant inhibitions in survival were 7, 10, and 80%, sorghum significant inhibitions in survival were 14, 100 and 100%, and soybean significant inhibitions in survival were 3, 57 and 100%, at the 0.37, 0.73 and 1.42/1.46 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Significant decreases in buckwheat survival were 30% at the highest concentration tested, 1.42 lb 2,4-D Choline Salt/A (Mann-Whitney U Two-Sample test, p<0.05).

The study author found significant inhibitions in seedling height compared to the negative control in all species tested. Significant inhibitions in mustard height were 16 to 83% from the 0.011 to the 1.41 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). Significant inhibitions in sunflower height were 31, 62, and 74%, and significant inhibitions in tomato height were 69, 82, and 88% at the 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels, respectively; there was 100% mortality at the three highest treatment levels. Significant inhibitions in cucumber height were 23, 44, 78, and 91%, in radish were 39, 50, 45, and 38%, and in sugarbeet were 9, 17, 44, and 41% at the 0.044, 0.088, 0.176, and 0.35 lb 2,4-D Choline Salt/A treatment levels, respectively; there was 100% mortality at the two highest treatment levels (Dunnett's test or Jonckheere-Terpstra test, p<0.05). Oilseed rape significant inhibitions in height were 12 to 63%, and buckwheat significant inhibitions in height were 34 to 78%, from the 0.044 to the 0.71/1.41 lb ai/A treatment level; there was 100% mortality at the highest treatment level for oilseed rape (Jonckheere-Terpstra test, p<0.05). Significant decrease in cabbage height measured 32, 51, 59, 67, and 62% at the 0.088, 0.176, 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). Significant inhibitions in wheat height were 44 and 42% at 0.176 and 0.35 lb ai/A, and significant inhibitions in soybean height were 19, 46, and 70% at 0.176, 0.35 and 0.71 lb 2,4-D Choline Salt/A (Jonckheere-Terpstra test, p<0.05); there was 100% mortality at the one to two highest treatment levels. Significant decreases in sorghum height were 69% at 0.35 lb 2,4-D Choline Salt/A (there was 100% mortality at the two highest treatment levels), and significant decreases in corn height were 29, 76, and 74% at 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). Significant inhibitions in onion of 32%, and in oat of 54 and 58%, were observed at the one to two highest treatment levels, the 0.71 and 1.41 lb 2,4-D Choline Salt/A, respectively (Jonckheere-Terpstra test, p<0.05).

The reviewer also found significant inhibitions in seedling height compared to the negative control in all species tested, including significant inhibitions in cucumber height of 12 to 92% from the 0.0027 to the 0.37 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant inhibitions in sunflower height measured 10, 31, 62, and 75% at the 0.0221, 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05); there was 100% mortality at the three highest treatment levels. Significant inhibitions in radish were 14 to 50% over

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the 0.0221 to the 0.37 lb 2,4-D Choline Salt/A treatment range, respectively (Dunnett's test, p<0.05); there was 100% mortality at the two highest treatment levels. Wheat height significant inhibitions were 36, 44, and 42% at the 0.088, 0.176, and 0.35 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. The reviewer found similar significant inhibitions in height as the study author for buckwheat, cabbage, corn, mustard, oat, and onion (Jonckheere-Terpstra Step-Down test, p<0.05); oilseed rape, soybean, sugarbeet, and tomato (Williams test, p<0.05); and sorghum (Dunnett's test, p<0.05).

The study author found significant inhibitions in dry weight compared to the negative control in all species tested. Significant inhibitions in buckwheat and mustard dry weight were 37 to 90%, and 30 to 97%, respectively, from the 0.0221 to the 1.41 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). Significant decreases in sugarbeet dry weight of 16 to 98% were observed from the 0.0221 to the 0.35 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant inhibitions in tomato dry weight measured 43, 83, 97, and 99% at the 0.0221, 0.044, 0.088, and 0.176 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Dunnett's test, p<0.05); there was 100% mortality at the three highest treatment levels. Cabbage showed significant inhibitions in dry weight of 15 to 98% from the 0.0055 to the 1.41 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra test, p<0.05), and cucumber showed significant inhibitions in dry weight of 8 to 96% from the 0.0055 to the 0.35 lb 2,4-D Choline Salt/A treatment level (Dunnett's test, p<0.05); there was 100% mortality at the two highest treatment levels for cucumber. Radish had significant inhibitions in dry weight of 52 to 98%, soybean of 9 to 91%, and sunflower of 41 to 95%, starting at the 0.044 lb 2,4-D Choline Salt/A treatment level (Jonckheere-Terpstra test, p<0.05); 100% mortality at the highest treatment level for soybean, two highest treatment levels for radish, and three highest treatment levels for sunflower. Significant inhibitions in oilseed rape dry weight were 55, 79, 92, and 98% at the 0.088, 0.176, 0.35 and 0.71 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05); there was 100% mortality at the highest treatment level. Significant inhibitions in wheat dry weight were 53, 72, and 86% at the 0.088, 0.176, and 0.35 lb 2,4-D Choline Salt/A treatment levels, respectively (Jonckheere-Terpstra test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant decreases in oat dry weight of 3, 37, 81, and 90% were observed at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels, respectively (Jonckheere-Terpstra test, p<0.05). Significant inhibitions in corn dry weight were 61, 91, and 89% at 0.35, 0.71 and 1.41 lb 2,4-D Choline Salt/A, respectively, significant inhibitions in sorghum dry weight were 81% at 0.35 lb 2,4-D Choline Salt/A (100% mortality in sorghum at the two highest treatment levels); and significant inhibitions in onion dry weight were 56 and 77% at the 0.71 and 1.41 lb 2,4-D Choline Salt/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

The reviewer also found significant inhibitions in seedling dry weight compared to the negative control in all species tested, including significant inhibitions in cucumber dry weight of 10 to 86% from the 0.011 to the 0.37 lb ai/A treatment level (Williams test, p<0.05); 100% mortality at the two highest treatment levels. Significant inhibitions in tomato dry weight were 12 to 96% from the 0.011 to the 0.176 lb 2,4-D Choline Salt/A treatment level (Williams test, p<0.05); 100% mortality at the three highest treatment levels. Radish dry weight significant inhibitions measured 17 to 92% from the 0.0221 to the 0.37 lb 2,4-D Choline Salt/A treatment level compared to the negative control (Williams test, p<0.05); there was 100% mortality at the two highest treatment levels. Significant decreases in oat dry weight were 31, 79, and 56% at the 0.35, 0.71 and 1.42 lb 2,4-D Choline Salt/A treatment levels, respectively (Dunnett's test, p<0.05). The reviewer found similar significant inhibitions in dry weight as the study author for buckwheat, cabbage, corn, mustard, oilseed rape, onion, and sunflower (Jonckheere-Terpstra Step-Down test, p<0.05); and sorghum, soybean, sugarbeet, and wheat (Williams test, p<0.05). Differences in dry weight effects between the study author and reviewer may be related to the study author using total dry weight for the replicate and not mean dry weight.

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Based on the study author's results, the most sensitive monocot was wheat based on dry weight, with NOEC and EC<sub>25</sub> values of 0.044 and 0.054 lb 2,4-D Choline Salt/A, respectively; the most sensitive dicot was mustard based on dry weight, with NOEC and ER<sub>25</sub> values of 0.011 and 0.014 lb 2,4-D Choline Salt/A, respectively.

There were moderate phytotoxic effects in onion (40-60), but severe to complete effects in all other species tested. Severe effects (70-100) were observed in buckwheat, cabbage, corn, mustard, and oat; complete mortality at the higher concentrations (100) were observed in cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Phytotoxic effects were dose-related in all species tested.

## **B. REPORTED STATISTICS:**

Survival, replicate shoot dry weight, and height mean and standard deviations were determined. Statistical analysis of rate versus effect data was performed using SAS Version 9.3. Survival data were tested using a combination of Fisher's Exact Comparison with Bonferroni-Holm Adjustment, and Cochran Armitage test. Length and weight data sets were tested for normality (Shapiro-Wilk) and homogeneity of variance (Levene's). Non-normal and/or non-homogeneous data sets were analyzed using non-parametric procedures (Wilcoxon scores analyzed using Dunn's multiple comparison), as well as trend testing (Jonckheere's). Normally distributed and homogenous data sets were analyzed using parametric procedures (Dunnett's pair-wise comparison), as well as trend testing (Jonckheere's). All statistical determinations were made with 95% certainty. Due to significant effects from NOER determinations, post-emergent survival data were analyzed using Probit methods, and plant shoot length and dry weight data was analyzed using non-linear regression dose-response models (Bruce, Versteeg Weighted Probit, Schabenberger Hormetic, and OECD Model 2; all models were fitted to the data using the Marquardt method). Nominal concentrations were used for all analyses.

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**Table 5: Effect of GF-2726 on 21-Day Vegetative Vigor**

| Species                   | Results summary for height (lbs 2,4-D Choline Salt/A) |        |                  |       |                  |             |                  |             |       |       |
|---------------------------|---|--------|------------------|-------|------------------|-------------|------------------|-------------|-------|-------|
|                           | height (mm)   | NOEC   | IC <sub>05</sub> | 95%CI | IC <sub>25</sub> | 95%CI       | IC <sub>50</sub> | 95%CI       | slope | 95%CI |
| Buckwheat <sup>1</sup>    | 164-771   | 0.022  | ND               | N/A   | 0.035            | 0.015-0.085 | 0.10             | 0.047-0.21  | N/A   | N/A   |
| Cabbage <sup>2</sup>      | 62.2-191  | 0.044  | ND               | N/A   | 0.062            | 0.036-0.11  | 0.30             | 0.22-0.41   | N/A   | N/A   |
| Corn <sup>3</sup>         | 181-782   | 0.176  | ND               | N/A   | 0.30             | 0.20-0.47   | 0.54             | 0.37-0.77   | N/A   | N/A   |
| Cucumber <sup>4</sup>     | 57.5-675  | 0.022  | ND               | N/A   | 0.058            | 0.047-0.072 | 0.10             | 0.090-0.12  | N/A   | N/A   |
| Mustard <sup>5</sup>      | 101-609   | 0.0055 | ND               | N/A   | 0.018            | 0.015-0.020 | 0.042            | 0.036-0.048 | N/A   | N/A   |
| Oat <sup>6</sup>          | 237-584   | 0.35   | ND               | N/A   | 0.47             | 0.29-0.75   | 0.87             | 0.56-1.37   | N/A   | N/A   |
| Oilseed rape <sup>7</sup> | 128-357   | 0.022  | ND               | N/A   | 0.061            | 0.033-0.11  | 0.19             | 0.10-0.33   | N/A   | N/A   |
| Onion <sup>8</sup>        | 255-418   | 0.71   | ND               | N/A   | 0.84             | 0.67-1.06   | >1.41            | ND          | N/A   | N/A   |
| Radish <sup>9</sup>       | 123-270   | 0.022  | ND               | N/A   | 0.028            | 0.013-0.059 | 0.14             | 0.10-0.21   | N/A   | N/A   |
| Sorghum <sup>10</sup>     | 174-572   | 0.176  | ND               | N/A   | 0.184            | 0.13-0.24   | 0.44             | 0.31-0.58   | N/A   | N/A   |
| Soybean <sup>11</sup>     | 109-374   | 0.088  | ND               | N/A   | 0.22             | 0.18-0.27   | 0.42             | 0.37-0.48   | N/A   | N/A   |
| Sugarbeet <sup>12</sup>   | 119-234   | 0.022  | ND               | N/A   | 0.078            | 0.059-0.10  | 0.27             | 0.22-0.33   | N/A   | N/A   |
| Sunflower <sup>13</sup>   | 101-407   | 0.022  | ND               | N/A   | 0.034            | 0.029-0.040 | 0.073            | 0.066-0.080 | N/A   | N/A   |
| Tomato <sup>14</sup>      | 41-426  | 0.022  | ND               | N/A   | 0.021            | 0.016-0.029 | 0.037            | 0.030-0.045 | N/A   | N/A   |
| Wheat <sup>15</sup>       | 262-467   | 0.088  | ND               | N/A   | 0.10             | 0.071-0.14  | 0.34             | 0.26-0.46   | N/A   | N/A   |

ND- Not determined. NC- Not calculable.

<sup>1</sup> Significant decrease in buckwheat height, inhibition of 34, 41, 67, 73, 78, and 76% at the 0.044, 0.088, 0.176, 0.35, 0.71, and 1.41 lb ai/A treatment level, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>2</sup> Significant decrease in cabbage height, inhibition of 32, 51, 59, 67, and 62% at the 0.088, 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>3</sup> Significant decrease in corn height, inhibition of 29, 76, and 74% at the 0.35, 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>4</sup> Significant decrease in cucumber height, inhibition of 23, 44, 78, and 91% at the 0.044, 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>5</sup> Significant decrease in mustard height, inhibition of 16 to 83% from the 0.011 to the 1.41 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>6</sup> Significant decrease in oat height, inhibition of 54 and 58% at the 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

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<sup>7</sup> Significant decrease in oilseed rape height, inhibition of 12 to 63% from the 0.044 to the 0.71 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>8</sup> Significant decrease in onion height, inhibition of 32% at the 1.41 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>9</sup> Significant decrease in radish height, inhibition of 39, 50, 45, and 38% at the 0.044, 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>10</sup> Significant decrease in sorghum height, inhibition of 69% at the 0.35 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>11</sup> Significant decrease in soybean height, inhibition of 19, 46, and 70% at the 0.176, 0.35 and 0.71 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>12</sup> Significant decrease in sugarbeet height, inhibition of 9, 17, 44, and 41% at the 0.044, 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>13</sup> Significant decrease in sunflower height, inhibition of 31, 62, and 74% at the 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>14</sup> Significant decrease in tomato height, inhibition of 69, 82, and 88% at the 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>15</sup> Significant decrease in wheat height, inhibition of 44 and 42% at the 0.176 and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

**Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

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**Table 5a: Effect of GF-2726 on 21-Day Vegetative Vigor**

| Species                   | Results summary for biomass (lbs 2,4-D Choline Salt/A) |        |                  |       |                  |              |                  |             |       |       |
|---------------------------|--|--------|------------------|-------|------------------|--------------|------------------|-------------|-------|-------|
|                           | weight (g)   | NOEC   | IC <sub>05</sub> | 95%CI | IC <sub>25</sub> | 95%CI        | IC <sub>50</sub> | 95%CI       | slope | 95%CI |
| Buckwheat <sup>1</sup>    | 0.277-2.06   | 0.011  | ND               | N/A   | 0.030            | 0.022-0.042  | 0.083            | 0.068-0.10  | N/A   | N/A   |
| Cabbage <sup>2</sup>      | 0.133-1.76   | 0.0027 | ND               | N/A   | 0.039            | 0.029-0.052  | 0.088            | 0.073-0.11  | N/A   | N/A   |
| Corn <sup>3</sup>         | 0.133-1.46   | 0.176  | ND               | N/A   | 0.20             | 0.17-0.24    | 0.31             | 0.27-0.35   | N/A   | N/A   |
| Cucumber <sup>4</sup>     | 0.528-3.68   | 0.0027 | ND               | N/A   | 0.066            | 0.056-0.078  | 0.11             | 0.10-0.12   | N/A   | N/A   |
| Mustard <sup>5</sup>      | 0.174-1.92   | 0.011  | ND               | N/A   | 0.014            | 0.0091-0.022 | 0.037            | 0.027-0.050 | N/A   | N/A   |
| Oat <sup>6</sup>          | 0.173-0.881  | 0.088  | ND               | N/A   | 0.26             | 0.23-0.30    | 0.41             | 0.38-0.45   | N/A   | N/A   |
| Oilseed rape <sup>7</sup> | 0.192-2.7  | 0.044  | ND               | N/A   | 0.054            | 0.045-0.067  | 0.089            | 0.077-0.10  | N/A   | N/A   |
| Onion <sup>8</sup>        | 0.099-0.523  | 0.35   | ND               | N/A   | 0.31             | 0.24-0.40    | 0.55             | 0.44-0.69   | N/A   | N/A   |
| Radish <sup>9</sup>       | 0.0991-1.44  | 0.022  | ND               | N/A   | 0.022            | 0.017-0.028  | 0.039            | 0.033-0.046 | N/A   | N/A   |
| Sorghum <sup>10</sup>     | 0.166-0.767  | 0.176  | ND               | N/A   | 0.22             | 0.19-0.25    | 0.27             | 0.25-0.29   | N/A   | N/A   |
| Soybean <sup>11</sup>     | 0.221-1.73   | 0.022  | ND               | N/A   | 0.15             | 0.13-0.17    | 0.25             | 0.23-0.27   | N/A   | N/A   |
| Sugarbeet <sup>12</sup>   | 0.131-1.3  | 0.011  | ND               | N/A   | 0.043            | 0.036-0.051  | 0.072            | 0.064-0.081 | N/A   | N/A   |
| Sunflower <sup>13</sup>   | 0.187-1.77   | 0.022  | ND               | N/A   | 0.032            | 0.028-0.036  | 0.051            | 0.047-0.055 | N/A   | N/A   |
| Tomato <sup>14</sup>      | 0.0886-2.46  | 0.011  | ND               | N/A   | 0.015            | 0.013-0.017  | 0.024            | 0.021-0.026 | N/A   | N/A   |
| Wheat <sup>15</sup>       | 0.229-0.558  | 0.044  | ND               | N/A   | 0.054            | 0.043-0.069  | 0.11             | 0.091-0.123 | N/A   | N/A   |

ND- Not determined. NC- Not calculable.

<sup>1</sup> Significant decrease in buckwheat dry weight, inhibition of 37 to 90% from the 0.0221 to the 1.41 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>2</sup> Significant decrease in cabbage dry weight, inhibition of 15 to 98% from the 0.0055 to the 1.41 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>3</sup> Significant decrease in corn dry weight, inhibition of 61, 91, and 89% at the 0.35, 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>4</sup> Significant decrease in cucumber dry weight, inhibition of 8 to 96% from the 0.0055 to the 0.35 lb ai/A treatment level compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>5</sup> Significant decrease in mustard dry weight, inhibition of 30 to 97% from the 0.0221 to the 1.41 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>6</sup> Significant decrease in oat dry weight, inhibition of 3, 37, 81, and 90% at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

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<sup>7</sup> Significant decrease in oilseed rape dry weight, inhibition of 55, 79, 92, and 98% at the 0.088, 0.176, 0.35 and 0.71 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>8</sup> Significant decrease in onion dry weight, inhibition of 56 and 77% at the 0.71 and 1.41 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05).

<sup>9</sup> Significant decrease in radish dry weight, inhibition of 52, 85, 94, and 98% at the 0.044, 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>10</sup> Significant decrease in sorghum dry weight, inhibition of 81% at the 0.35 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>11</sup> Significant decrease in soybean dry weight, inhibition of 9 to 91% from the 0.044 to the 0.71 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>12</sup> Significant decrease in sugarbeet dry weight, inhibition of 16 to 98% from the 0.0221 to the 0.35 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>13</sup> Significant decrease in sunflower dry weight, inhibition of 41, 80, and 95% at the 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>14</sup> Significant decrease in tomato dry weight, inhibition of 43, 83, 97, and 99% at the 0.0221, 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>15</sup> Significant decrease in wheat dry weight, inhibition of 53, 72, and 86% at the 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra test, p<0.05). There was 100% mortality at the two highest treatment levels.

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Table 5b: Effect of GF-2726 on 21-Day Vegetative Vigor

| Species                   | Results summary for survival (lbs 2,4-D Choline Salt/A) |       |                  |       |                  |             |                  |            |       |       |
|---------------------------|---|-------|------------------|-------|------------------|-------------|------------------|------------|-------|-------|
|                           | %   | NOEC  | EC <sub>05</sub> | 95%CI | EC <sub>25</sub> | 95%CI       | EC <sub>50</sub> | 95%CI      | slope | 95%CI |
| Buckwheat <sup>1</sup>    | 70-100  | 0.35  | ND               | N/A   | 1.05             | 0.78-1.64   | >1.41            | ND         | N/A   | N/A   |
| Cabbage <sup>2</sup>      | 17-100  | 0.176 | ND               | N/A   | 0.77             | 0.66-0.89   | 1.02             | 0.90-1.17  | N/A   | N/A   |
| Corn                      | 100   | 1.41  | ND               | N/A   | >1.41            | ND          | >1.41            | ND         | N/A   | N/A   |
| Cucumber <sup>3</sup>     | 0-100   | 0.176 | ND               | N/A   | 0.31             | ND          | 0.33             | ND         | N/A   | N/A   |
| Mustard <sup>4</sup>      | 17-100  | 0.088 | ND               | N/A   | 0.28             | 0.20-0.35   | 0.55             | 0.43-0.71  | N/A   | N/A   |
| Oat <sup>5</sup>          | 20-100  | 0.176 | ND               | N/A   | 0.86             | 0.74-0.98   | 1.11             | 0.98-1.26  | N/A   | N/A   |
| Oilseed rape <sup>6</sup> | 0-100   | 0.088 | ND               | N/A   | 0.27             | 0.21-0.32   | 0.42             | 0.35-0.51  | N/A   | N/A   |
| Onion                     | 100   | 1.41  | ND               | N/A   | >1.41            | ND          | >1.41            | ND         | N/A   | N/A   |
| Radish <sup>7</sup>       | 0-100   | 0.044 | ND               | N/A   | 0.092            | 0.073-0.11  | 0.14             | 0.11-0.16  | N/A   | N/A   |
| Sorghum <sup>8</sup>      | 0-100   | 0.176 | ND               | N/A   | 0.36             | ND          | 0.39             | ND         | N/A   | N/A   |
| Soybean <sup>9</sup>      | 0-100   | 0.35  | ND               | N/A   | 0.53             | 0.44-0.60   | 0.66             | 0.57-0.75  | N/A   | N/A   |
| Sugarbeet <sup>10</sup>   | 0-100   | 0.088 | ND               | N/A   | 0.17             | 0.14-0.19   | 0.21             | 0.18-0.24  | N/A   | N/A   |
| Sunflower <sup>11</sup>   | 0-100   | 0.088 | ND               | N/A   | 0.16             | ND          | 0.17             | ND         | N/A   | N/A   |
| Tomato <sup>12</sup>      | 0-100   | 0.044 | ND               | N/A   | 0.083            | 0.068-0.094 | 0.10             | 0.089-0.12 | N/A   | N/A   |
| Wheat <sup>13</sup>       | 0-100   | 0.088 | ND               | N/A   | 0.14             | 0.11-0.16   | 0.20             | 0.17-0.23  | N/A   | N/A   |

ND- Not determined. NC- Not calculable.

<sup>1</sup> Significant inhibition in buckwheat survival at the 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>2</sup> Significant inhibition in cabbage survival at the 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>3</sup> Significant inhibition in cucumber survival at the 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>4</sup> Significant inhibition in mustard survival at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>5</sup> Significant inhibition in oat survival at the 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

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<sup>6</sup> Significant inhibition in oilseed rape survival at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>7</sup> Significant inhibition in radish survival at the 0.088, 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>8</sup> Significant inhibition in sorghum survival at the 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>9</sup> Significant inhibition in soybean survival at the 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>10</sup> Significant inhibition in sugarbeet survival at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>11</sup> Significant inhibition in sunflower survival at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>12</sup> Significant inhibition in tomato survival at the 0.088, 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

<sup>13</sup> Significant inhibition in wheat survival at the 0.176, 0.35, 0.71 and 1.41 lb ai/A treatment levels compared to the control; inhibitions not reported (Cochran-Armitage test, p<0.05).

| Plant Injury Index* |            |         |      |          |         |      |              |       |        |         |          |            |            |        |       |
|---------------------|------------|---------|------|----------|---------|------|--------------|-------|--------|---------|----------|------------|------------|--------|-------|
| Control             | Buck wheat | Cabbage | Corn | Cucumber | Mustard | Oat  | Oilseed rape | Onion | Radish | Sorghum | Soy-bean | Sun-flower | Sugar beet | Tomato | Wheat |
| 0                   | 0-75       | 0-93    | 0-82 | 0-100    | 0-93    | 0-92 | 0-100        | 0-43  | 0-100  | 0-100   | 0-100    | 0-100      | 0-100      | 0-100  | 0-100 |

Formula Blank is N/A.

\*1-10 = no effect; 20-30 = slight effect; 40-60 = moderate effect; 70-100 = severe effect; 100 = complete effect.

## C. VERIFICATION OF STATISTICAL RESULTS BY THE REVIEWER:

All analyses were conducted comparing treated to the negative control. These analyses were conducted using CETIS version 1.8.7.12 and backend settings approved for use by EFED on 10/20/2015. Data for each endpoint were tested to determine if their distributions were normal and if their variances were homogeneous using Shapiro-Wilk's and Levene's tests, respectively. Data that satisfied these assumptions were subjected to Dunnett's and William's tests, and data that did not satisfy these assumptions were subjected to the non-parametric Mann-Whitney U and Jonckheere's tests. Measured concentrations were used in analyses for the three highest treatment levels for all species, and nominal concentrations were used for the lower treatment levels. Linear (survival) and nonlinear (height and dry weight) regression models were used to interpret EC/IC<sub>x</sub> values.

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**Table 6: Effect of GF-2726 on 21-Day Vegetative Vigor**

| Species                   | Results summary for height (lbs 2,4-D Choline Salt/A) |        |                  |                  |                  |                 |                  |               |       |       |
|---------------------------|---|--------|------------------|------------------|------------------|-----------------|------------------|---------------|-------|-------|
|                           | height (mm)   | NOEC   | IC <sub>05</sub> | 95%CI            | IC <sub>25</sub> | 95%CI           | IC <sub>50</sub> | 95%CI         | slope | 95%CI |
| Buckwheat <sup>1</sup> #  | 164-771   | 0.0221 | 0.00168          | 0.000102-0.00399 | 0.0188           | 0.0136-0.0253   | 0.101            | 0.0826-0.122  | N/A   | N/A   |
| Cabbage <sup>2</sup>      | 62.2-191  | 0.044  | 0.0063           | 0.00145-0.0126   | 0.0625           | 0.0444-0.0854   | 0.308            | 0.253-0.376   | N/A   | N/A   |
| Corn <sup>3</sup> #       | 181-782   | 0.176  | NC               | N/A              | NC               | N/A             | NC               | N/A           | N/A   | N/A   |
| Cucumber <sup>4</sup>     | 57.5-675  | 0.0027 | 0.024            | 0.00988-0.0325   | 0.0568           | 0.0462-0.068    | 0.103            | 0.0915-0.117  | N/A   | N/A   |
| Mustard <sup>5</sup>      | 101-609   | 0.0055 | 0.000333         | N/A-0.0015       | 0.00501          | 0.00306-0.00777 | 0.0329           | 0.0246-0.044  | N/A   | N/A   |
| Oat <sup>6</sup> #        | 237-584   | 0.176  | 0.142            | 0.0835-0.19      | 0.428            | 0.36-0.501      | 0.922            | 0.829-1.03    | N/A   | N/A   |
| Oilseed rape <sup>7</sup> | 128-357   | 0.0221 | 0.00493          | 0.00125-0.0095   | 0.0442           | 0.0322-0.0592   | 0.203            | 0.169-0.244   | N/A   | N/A   |
| Onion <sup>8</sup> #      | 255-418   | 0.73   | 0.205            | 0.0769-0.32      | 0.872            | 0.713-1.05      | 2.39             | 1.66-3.43     | N/A   | N/A   |
| Radish <sup>9</sup>       | 123-270   | 0.011  | 0.00263          | 9.03E-05-0.00627 | 0.028            | 0.0186-0.0403   | 0.145            | 0.105-0.2     | N/A   | N/A   |
| Sorghum <sup>10</sup> #   | 174-572   | 0.176  | 0.287            | 0.282-0.291      | 0.314            | 0.313-0.315     | 0.335            | 0.334-0.336   | N/A   | N/A   |
| Soybean <sup>11</sup>     | 109-374   | 0.088  | 0.0849           | 0.0398-0.116     | 0.218            | 0.178-0.261     | 0.421            | 0.373-0.475   | N/A   | N/A   |
| Sugarbeet <sup>12</sup>   | 119-234   | 0.0221 | 0.0123           | 0.00626-0.0186   | 0.0771           | 0.063-0.0929    | 0.277            | 0.221-0.346   | N/A   | N/A   |
| Sunflower <sup>13</sup>   | 101-407   | 0.011  | 0.0114           | 0.00781-0.0146   | 0.034            | 0.0297-0.0385   | 0.0724           | 0.0669-0.0784 | N/A   | N/A   |
| Tomato <sup>14</sup>      | 41-426  | 0.0221 | 0.00974          | N/A-0.0142       | 0.0212           | 0.0158-0.0269   | 0.0365           | 0.0309-0.0431 | N/A   | N/A   |
| Wheat <sup>15</sup>       | 262-467   | 0.044  | 0.0171           | 0.0069-0.0278    | 0.1              | 0.0779-0.126    | 0.343            | 0.259-0.454   | N/A   | N/A   |

ND- Not determined. NC- Not calculable.

# Jonckheere-Terpstra Step-Down test selected for trends analysis; CETIS was unable to run the Williams test on more than 10 treatment levels.

<sup>1</sup> Significant decrease in buckwheat height, inhibition of 34 to 78% from the 0.044 to the 1.42 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>2</sup> Significant decrease in cabbage height, inhibition of 33 to 67% from the 0.088 to the 1.46 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>3</sup> Significant decrease in corn height, inhibition of 29, 76 and 74% at the 0.35, 0.71, and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>4</sup> Significant decrease in cucumber height, inhibition of 12 to 92% from the 0.0027 to the 0.37 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>5</sup> Significant decrease in mustard height, inhibition of 16 to 83% from the 0.011 to the 1.46 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>6</sup> Significant decrease in oat height, inhibition of 54 and 58% at the 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

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<sup>7</sup> Significant decrease in oilseed rape height, inhibition of 12 to 63% from the 0.044 to the 0.73 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>8</sup> Significant decrease in onion height, inhibition of 32% at the 1.46 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>9</sup> Significant decrease in radish height, inhibition of 14 to 50% over the 0.0221 to 0.37 lb ai/A treatment range compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>10</sup> Significant decrease in sorghum height, inhibition of 69% at the 0.35 lb ai/A treatment level compared to the negative control (Dunnett's test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>11</sup> Significant decrease in soybean height, inhibition of 19, 46 and 70% at the 0.176, 0.35, and 0.71 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the highest treatment level.

<sup>12</sup> Significant decrease in sugarbeet height, inhibition of 9, 17, 44, and 41% at the 0.044, 0.088, 0.176, and 0.37 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>13</sup> Significant decrease in sunflower height, inhibition of 10, 31, 62, and 75% at the 0.0221, 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>14</sup> Significant decrease in tomato height, inhibition of 69, 82, and 88% at the 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the three highest treatment levels.

<sup>15</sup> Significant decrease in wheat height, inhibition of 36, 44, and 42% at the 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

# Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 49903202

Table 6a: Effect of GF-2726 on 21-Day Vegetative Vigor

| Species                   | Results summary for biomass (lbs 2,4-D Choline Salt/A) |        |                  |                 |                  |                |                  |               |       |       |
|---------------------------|--|--------|------------------|-----------------|------------------|----------------|------------------|---------------|-------|-------|
|                           | Weight (g)   | NOEC   | IC <sub>05</sub> | 95%CI           | IC <sub>25</sub> | 95%CI          | IC <sub>50</sub> | 95%CI         | slope | 95%CI |
| Buckwheat <sup>1</sup>    | 0.277-2.06   | 0.011  | 0.002            | 0.000124-0.0044 | 0.0174           | 0.0129-0.023   | 0.0785           | 0.0648-0.0951 | N/A   | N/A   |
| Cabbage <sup>2</sup>      | 0.133-1.76   | 0.0027 | 0.00654          | N/A-0.012       | 0.0294           | 0.0211-0.0392  | 0.0835           | 0.0677-0.103  | N/A   | N/A   |
| Corn <sup>3#</sup>        | 0.133-1.46   | 0.176  | 0.0644           | N/A-0.0909      | 0.161            | 0.125-0.199    | 0.304            | 0.261-0.354   | N/A   | N/A   |
| Cucumber <sup>4</sup>     | 0.528-3.68   | 0.0055 | 0.0179           | 0.00955-0.0244  | 0.052            | 0.0429-0.0617  | 0.109            | 0.0975-0.122  | N/A   | N/A   |
| Mustard <sup>5</sup>      | 0.174-1.92   | 0.011  | 0.00136          | N/A-0.00367     | 0.00903          | 0.00605-0.0128 | 0.0336           | 0.0259-0.0435 | N/A   | N/A   |
| Oat <sup>6#</sup>         | 0.173-0.881  | 0.088  | 0.0473           | N/A-0.0832      | 0.205            | 0.14-0.283     | 0.566            | 0.459-0.699   | N/A   | N/A   |
| Oilseed rape <sup>7</sup> | 0.192-2.7  | 0.044  | 0.0126           | 0.00494-0.0185  | 0.0408           | 0.0325-0.0498  | 0.0921           | 0.0799-0.106  | N/A   | N/A   |
| Onion <sup>8#</sup>       | 0.099-0.523  | 0.37   | 0.112            | N/A-0.173       | 0.304            | 0.217-0.4      | 0.607            | 0.509-0.725   | N/A   | N/A   |
| Radish <sup>9</sup>       | 0.0991-1.44  | 0.011  | 0.00686          | N/A-0.0105      | 0.0197           | 0.0151-0.0247  | 0.041            | 0.0349-0.0481 | N/A   | N/A   |
| Sorghum <sup>10</sup>     | 0.166-0.767  | 0.176  | NC               | N/A             | NC               | N/A            | NC               | N/A           | N/A   | N/A   |
| Soybean <sup>11</sup>     | 0.221-1.73   | 0.0221 | 0.0563           | 0.0401-0.0692   | 0.136            | 0.119-0.153    | 0.251            | 0.232-0.271   | N/A   | N/A   |
| Sugarbeet <sup>12</sup>   | 0.131-1.3  | 0.011  | 0.0122           | 0.00525-0.0171  | 0.0343           | 0.0277-0.0413  | 0.0703           | 0.062-0.0798  | N/A   | N/A   |
| Sunflower <sup>13</sup>   | 0.187-1.77   | 0.0221 | 0.0126           | 0.0083-0.0158   | 0.0287           | 0.025-0.0325   | 0.0508           | 0.0467-0.0552 | N/A   | N/A   |
| Tomato <sup>14</sup>      | 0.0886-2.46  | 0.0055 | 0.00656          | 0.00251-0.00862 | 0.0139           | 0.0117-0.0162  | 0.0235           | 0.021-0.0262  | N/A   | N/A   |
| Wheat <sup>15</sup>       | 0.229-0.558  | 0.044  | 0.0101           | N/A-0.0201      | 0.0576           | 0.0376-0.0832  | 0.194            | 0.143-0.262   | N/A   | N/A   |

ND- Not determined. NC- Not calculable.

# Jonckheere-Terpstra Step-Down test selected for trends analysis; CETIS was unable to run the Williams test on more than 10 treatment levels.

<sup>1</sup> Significant decrease in buckwheat dry weight, inhibition of 21 to 86% from the 0.0221 to the 1.42 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>2</sup> Significant decrease in cabbage dry weight, inhibition of 15 to 93% from the 0.0055 to the 1.46 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>3</sup> Significant decrease in corn dry weight, inhibition of 61, 91, and 89% at the 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>4</sup> Significant decrease in cucumber dry weight, inhibition of 10 to 86% from the 0.011 to the 0.37 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). 100% mortality at the two highest treatment levels.

<sup>5</sup> Significant decrease in mustard dry weight, inhibition of 31 to 91% from the 0.0221 to the 1.46 lb ai/A treatment level compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>6</sup> Significant decrease in oat dry weight, inhibition of 31, 79, and 56% at the 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Dunnett's test, p<0.05).

## **Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

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<sup>7</sup> Significant decrease in oilseed rape dry weight, inhibition of 55, 76, 89, and 93% at the 0.088, 0.176, 0.37, and 0.73 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). 100% mortality at the highest treatment level.

<sup>8</sup> Significant decrease in onion dry weight, inhibition of 56 and 77% at the 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>9</sup> Significant decrease in radish dry weight, inhibition of 17 to 92% from the 0.0221 to the 0.37 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>10</sup> Significant decrease in sorghum dry weight, inhibition of 78% at the 0.35 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>11</sup> Significant decrease in soybean dry weight, inhibition of 9 to 87% from the 0.044 to the 0.71 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). 100% mortality at the highest treatment level.

<sup>12</sup> Significant decrease in sugarbeet dry weight, inhibition of 16 to 89% from the 0.0221 to the 0.37 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

<sup>13</sup> Significant decrease in sunflower dry weight, inhibition of 41, 80, and 89% at the 0.044, 0.088, and 0.176 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). 100% mortality at the three highest treatment levels

<sup>14</sup> Significant decrease in tomato dry weight, inhibition of 12 to 96% from the 0.011 to the 0.176 lb ai/A treatment level compared to the negative control (Williams test, p<0.05). 100% mortality at the three highest treatment levels.

<sup>15</sup> Significant decrease in wheat dry weight, inhibition of 53, 47, and 58% at the 0.088, 0.176, and 0.35 lb ai/A treatment levels, respectively, compared to the negative control (Williams test, p<0.05). There was 100% mortality at the two highest treatment levels.

**Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

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Table 6c: Effect of GF-2726 on 21-Day Vegetative Vigor

| Species                   | Results summary for survival (lbs 2,4-D Choline Salt/A); based on # planted |       |                  |               |                  |               |                  |              |       |           |
|---------------------------|---|-------|------------------|---------------|------------------|---------------|------------------|--------------|-------|-----------|
|                           | %   | NOEC  | EC <sub>05</sub> | 95%CI         | EC <sub>25</sub> | 95%CI         | EC <sub>50</sub> | 95%CI        | slope | 95%CI     |
| Buckwheat <sup>1</sup>    | 70-100  | 0.71  | 0.434            | 0.19-0.614    | 1.06             | 0.781-1.64    | 1.96             | 1.35-4.99    | 2.51  | 1.24-3.79 |
| Cabbage <sup>2</sup>      | 17-100  | 0.088 | 0.346            | 0.212-0.454   | 0.629            | 0.488-0.758   | 0.952            | 0.791-1.19   | 3.75  | 2.48-5.02 |
| Corn                      | 100   | 1.42  | >1.42            | N/A           | >1.42            | N/A           | >1.42            | N/A          | N/A   | N/A       |
| Cucumber <sup>3</sup>     | 0-100   | 0.176 | NC               | N/A           | NC               | N/A           | 0.293            | 0.267-0.322  | N/A   | N/A       |
| Mustard <sup>4</sup>      | 17-100  | 0.088 | 0.107            | 0.0607-0.154  | 0.285            | 0.21-0.364    | 0.564            | 0.444-0.742  | 2.28  | 1.69-2.87 |
| Oat <sup>5</sup>          | 20-100  | 0.176 | 0.437            | 0.273-0.559   | 0.725            | 0.57-0.861    | 1.03             | 0.869-1.27   | 0.82  | 2.8-6.02  |
| Oilseed rape <sup>6</sup> | 0-100   | 0.088 | 0.142            | 0.0914-0.188  | 0.276            | 0.213-0.337   | 0.439            | 0.363-0.533  | 3.35  | 2.49-4.22 |
| Onion                     | 100   | 1.46  | >1.46            | N/A           | >1.46            | N/A           | >1.46            | N/A          | N/A   | N/A       |
| Radish <sup>7</sup>       | 0-100   | 0.044 | 0.052            | 0.035-0.067   | 0.0923           | 0.0728-0.11   | 0.137            | 0.115-0.164  | 3.9   | 2.87-4.92 |
| Sorghum <sup>8</sup>      | 0-100   | 0.176 | NC               | N/A           | NC               | N/A           | 0.445            | 0.405-0.489  | N/A   | N/A       |
| Soybean <sup>9</sup>      | 0-100   | 0.176 | 0.389            | 0.274-0.466   | 0.53             | 0.433-0.604   | 0.658            | 0.574-0.753  | 7.2   | 4.54-9.86 |
| Sugarbeet <sup>10</sup>   | 0-100   | 0.088 | 0.117            | 0.0838-0.141  | 0.165            | 0.136-0.19    | 0.21             | 0.182-0.243  | 6.45  | 4.29-8.61 |
| Sunflower <sup>11</sup>   | 0-100   | 0.088 | NC               | N/A           | NC               | N/A           | 0.153            | 0.136-0.172  | N/A   | N/A       |
| Tomato <sup>12</sup>      | 0-100   | 0.044 | 0.0619           | 0.0447-0.0732 | 0.0825           | 0.0686-0.0933 | 0.101            | 0.0887-0.115 | 7.77  | 4.82-10.7 |
| Wheat <sup>13</sup>       | 0-100   | 0.088 | 0.0836           | 0.0572-0.106  | 0.139            | 0.111-0.164   | 0.197            | 0.167-0.233  | 4.42  | 3.19-5.65 |

ND- Not determined. NC- Not calculable.

<sup>1</sup> Significant decrease in buckwheat survival, inhibition of 30% at the 1.42 lb ai/A treatment level compared to the negative control (Mann-Whitney U Two-Sample test, p<0.05).

<sup>2</sup> Significant decrease in cabbage survival, inhibition of 3, 3, 23 and 83% at the 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>3</sup> Significant decrease in cucumber survival, inhibition of 81, 100 and 100% at the 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Endpoints determined by Spearman-Karber analyses.

<sup>4</sup> Significant decrease in mustard survival, inhibition of 13, 33, 83 and 67% at the 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>5</sup> Significant decrease in oat survival, inhibition of 7, 10, and 80% at the 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>6</sup> Significant decrease in oilseed rape survival, inhibition of 20, 23, 77, and 100% at the 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

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<sup>7</sup> Significant decrease in radish survival, inhibition of 33, 57, 97, 100 and 100% at the 0.088, 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>8</sup> Significant decrease in sorghum survival, inhibition of 14, 100 and 100% at the 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Endpoints determined by Spearman-Karber analyses.

<sup>9</sup> Significant decrease in soybean survival, inhibition of 3, 57 and 100% at the 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>10</sup> Significant decrease in sugarbeet survival, inhibition of 33, 93, 100 and 100% at the 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>11</sup> Significant decrease in sunflower survival, inhibition of 70, 100, 100 and 100% at the 0.176, 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05). Endpoints determined by Spearman-Karber analyses.

<sup>12</sup> Significant decrease in tomato survival, inhibition of 33, 97, 100, 100 and 100% at the 0.088, 0.176, 0.37, 0.73 and 1.46 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

<sup>13</sup> Significant decrease in wheat survival, inhibition of 60, 77, 100 and 100% at the 0.176, 0.35, 0.71 and 1.42 lb ai/A treatment levels, respectively, compared to the negative control (Jonckheere-Terpstra Step-Down test, p<0.05).

| Plant Injury Index* |            |         |      |          |         |      |              |       |        |         |          |            |            |        |       |
|---------------------|------------|---------|------|----------|---------|------|--------------|-------|--------|---------|----------|------------|------------|--------|-------|
| Control             | Buck wheat | Cabbage | Corn | Cucumber | Mustard | Oat  | Oilseed rape | Onion | Radish | Sorghum | Soy-bean | Sun-flower | Sugar beet | Tomato | Wheat |
| 0                   | 0-75       | 0-93    | 0-82 | 0-100    | 0-93    | 0-92 | 0-100        | 0-43  | 0-100  | 0-100   | 0-100    | 0-100      | 0-100      | 0-100  | 0-100 |

Formula Blank is N/A.

\*1-10 = no effect; 20-30 = slight effect; 40-60 = moderate effect; 70-100 = severe effect; 100 = complete effect.

**Table 6d: Effect of GF-2726 on 21-Day Vegetative Vigor– Reanalysis excluding significant mortality\***

| Species      | Results summary for height (lbs 2,4-D Choline Salt/A) |                            |                  |                  |                  |                |                  |                |       |       |
|--------------|---|----------------------------|------------------|------------------|------------------|----------------|------------------|----------------|-------|-------|
|              | height (mm)   | Survival NOEC/ Height NOEC | IC <sub>05</sub> | 95%CI            | IC <sub>25</sub> | 95%CI          | IC <sub>50</sub> | 95%CI          | slope | 95%CI |
| Buckwheat#   | 164-771   | 0.71/ 0.011                | 0.00625          | 0.00303- 0.00947 | 0.0324           | 0.0262- 0.0394 | 0.1012           | 0.0901- 0.115  | N/A   | N/A   |
| Cabbage      | 62.2-191  | 0.044/ 0.044               | 0.0203           | 0.00985- 0.03    | 0.0849           | 0.0682- 0.104  | 0.23             | 0.2- 0.264     | N/A   | N/A   |
| Cucumber     | 57.5-675  | 0.176/ 0.0027              | 0.024            | 0.00988- 0.0325  | 0.0568           | 0.0462- 0.068  | 0.103            | 0.0915- 0.117  | N/A   | N/A   |
| Mustard      | 101-609   | 0.088/ 0.0055              | 0.00397          | 0.00186- 0.00586 | 0.0157           | 0.0129- 0.0188 | 0.0408           | 0.0364- 0.0459 | N/A   | N/A   |
| Oat          | 237-584   | 0.176/ 0.176               | 0.28             | 0.211- 0.324     | 0.467            | 0.427- 0.506   | 0.666            | 0.637- 0.696   | N/A   | N/A   |
| Oilseed rape | 128-357   | 0.088/ 0.0221              | 0.0323           | N/A- 0.0413      | 0.0616           | 0.0537- 0.0695 | 0.0966           | 0.0864- 0.108  | N/A   | N/A   |
| Radish       | 123-270   | 0.044/ 0.011               | 0.00905          | 0.00366- 0.0134  | 0.0313           | 0.0251- 0.0382 | 0.0742           | 0.0633- 0.0869 | N/A   | N/A   |
| Sorghum      | 174-572   | 0.176/ 0.176               | 0.287            | 0.282- 0.291     | 0.314            | 0.313- 0.315   | 0.335            | 0.334- 0.336   | N/A   | N/A   |

**Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

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| Species   | Results summary for height (lbs 2,4-D Choline Salt/A) |                            |                  |                |                  |                |                  |                |       |       |
|-----------|---|----------------------------|------------------|----------------|------------------|----------------|------------------|----------------|-------|-------|
|           | height (mm)   | Survival NOEC/ Height NOEC | IC <sub>05</sub> | 95%CI          | IC <sub>25</sub> | 95%CI          | IC <sub>50</sub> | 95%CI          | slope | 95%CI |
| Soybean   | 109-374   | 0.176/ 0.088               | 0.10             | N/A- 0.143     | 0.225            | 0.184- 0.268   | 0.395            | 0.327- 0.478   | N/A   | N/A   |
| Sugarbeet | 119-234   | 0.088/ 0.0221              | NC               | N/A            | NC               | N/A            | NC               | N/A            | N/A   | N/A   |
| Sunflower | 101-407   | 0.088/ 0.011               | 0.0162           | 0.0119- 0.0196 | 0.0376           | 0.0336- 0.0416 | 0.0675           | 0.0633- 0.0719 | N/A   | N/A   |
| Tomato    | 41-426  | 0.044/ 0.011               | 0.0108           | N/A- 0.0151    | 0.0221           | 0.017- 0.0273  | 0.0363           | 0.0313- 0.0421 | N/A   | N/A   |
| Wheat     | 262-467   | 0.088/ 0.044               | 0.0773           | 0.0744- 0.0791 | 0.0854           | 0.0842- 0.0866 | 0.0916           | 0.0911- 0.0921 | N/A   | N/A   |

| Species                 | Results summary for biomass (lbs 2,4-D Choline Salt/A) |                             |                  |                  |                  |                |                  |                |       |       |
|-------------------------|--|-----------------------------|------------------|------------------|------------------|----------------|------------------|----------------|-------|-------|
|                         | Weight (g)   | Survival NOEC/ Biomass NOEC | IC <sub>05</sub> | 95%CI            | IC <sub>25</sub> | 95%CI          | IC <sub>50</sub> | 95%CI          | slope | 95%CI |
| Buckwheat               | 0.277-2.06   | 0.71/ 0.011                 | 0.00603          | 0.00264- 0.00931 | 0.0291           | 0.0232- 0.0357 | 0.0868           | 0.0762- 0.0988 | N/A   | N/A   |
| Cabbage                 | 0.133-1.76   | 0.0027/ 0.0027              | 0.0155           | 0.00383- 0.0228  | 0.0444           | 0.0345- 0.0552 | 0.0924           | 0.0796- 0.107  | N/A   | N/A   |
| Cucumber                | 0.528-3.68   | 0.176/ 0.0055               | 0.0179           | 0.00955- 0.0244  | 0.052            | 0.0429- 0.0617 | 0.109            | 0.0975- 0.122  | N/A   | N/A   |
| Mustard                 | 0.174-1.92   | 0.088/ 0.0055               | 0.00871          | 0.00389- 0.012   | 0.0227           | 0.0187- 0.027  | 0.0442           | 0.0393- 0.0499 | N/A   | N/A   |
| Oat                     | 0.173-0.881  | 0.176/ 0.088                | 0.172            | 0.121- 0.204     | 0.301            | 0.266- 0.336   | 0.445            | 0.415- 0.477   | N/A   | N/A   |
| Oilseed rape            | 0.192-2.7  | 0.088/ 0.0221               | 0.0312           | N.A- 0.0405      | 0.056            | 0.0467- 0.0651 | 0.0842           | 0.0763- 0.0929 | N/A   | N/A   |
| Radish                  | 0.0991-1.44  | 0.044/ 0.011                | 0.0105           | N/A- 0.0142      | 0.0234           | 0.0189- 0.0282 | 0.0411           | 0.0364- 0.0463 | N/A   | N/A   |
| Sorghum                 | 0.166-0.767  | 0.176/ 0.176                | NC               | N/A              | NC               | N/A            | NC               | N/A            | N/A   | N/A   |
| Soybean                 | 0.221-1.73   | 0.176/ 0.0221               | 0.0617           | 0.0399- 0.0776   | 0.141            | 0.122- 0.16    | 0.25             | 0.231- 0.27    | N/A   | N/A   |
| Sugarbeet               | 0.131-1.3  | 0.088/ 0.011                | 0.0175           | 0.0128- 0.0207   | 0.0329           | 0.0295- 0.0364 | 0.0512           | 0.048- 0.0546  | N/A   | N/A   |
| Sunflower <sup>13</sup> | 0.187-1.77   | 0.088/ 0.011                | 0.0175           | 0.0128- 0.0207   | 0.0329           | 0.0295- 0.0364 | 0.0512           | 0.048- 0.0546  | N/A   | N/A   |

**Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

PMRA Submission Number {.....}

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| Species | Results summary for biomass (lbs 2,4-D Choline Salt/A) |                            |                  |                 |                  |               |                  |               |       |       |
|---------|--|----------------------------|------------------|-----------------|------------------|---------------|------------------|---------------|-------|-------|
|         | Weight (g)   | Survival NOEC/Biomass NOEC | IC <sub>05</sub> | 95%CI           | IC <sub>25</sub> | 95%CI         | IC <sub>50</sub> | 95%CI         | slope | 95%CI |
| Tomato  | 0.0886-2.46  | 0.044/0.011                | 0.00711          | 0.00413-0.00894 | 0.0145           | 0.0125-0.0164 | 0.0238           | 0.0217-0.026  | N/A   | N/A   |
| Wheat   | 0.229-0.558  | 0.088/0.044                | 0.0528           | N/A-0.0735      | 0.0711           | N/A-0.0918    | 0.0873           | 0.0828-0.0921 | N/A   | N/A   |

**2,4-D Choline Salt**  
**Monocot**

**Most sensitive monocot: Wheat based on dry weight**

|   |                                 |
|---|---------------------------------|
| EC <sub>50</sub> /IC <sub>50</sub> : 0.0873 lb ai/A | 95% C.I.: 0.0828-0.0921 lb ai/A |
| EC <sub>25</sub> /IC <sub>25</sub> : 0.0711 lb ai/A | 95% C.I.: N/A-0.0918 lb ai/A    |
| EC <sub>05</sub> /IC <sub>05</sub> : 0.0528 lb ai/A | 95% C.I.: N/A-0.0735 lb ai/A    |
| NOEC: 0.044 lb ai/A                                 |                                 |
| Slope: N/A  | 95% C.I.: N/A                   |

**Dicot**

**Most sensitive dicot: Tomato based on dry weight**

|  |                                   |
|--|-----------------------------------|
| EC <sub>50</sub> /IC <sub>50</sub> : 0.0238 lb ai/A  | 95% C.I.: 0.0217-0.026 lb ai/A    |
| EC <sub>25</sub> /IC <sub>25</sub> : 0.0145 lb ai/A  | 95% C.I.: 0.0125-0.0164 lb ai/A   |
| EC <sub>05</sub> /IC <sub>05</sub> : 0.00711 lb ai/A | 95% C.I.: 0.00413-0.00894 lb ai/A |
| NOEC: 0.011 lb ai/A                                  |                                   |
| Slope: N/A   | 95% C.I.: N/A                     |

**D. STUDY DEFICIENCIES:**

1. Complete mortality at the higher concentrations were observed in cucumber, oilseed rape, radish, sorghum, soybean, sugarbeet, sunflower, tomato and wheat. Vegetative vigor studies are intended to capture sub-lethal effects, and morality at the higher treatment levels may have confounded growth effects.
2. Relative humidity for buckwheat, corn, oat, sorghum, soybean, sunflower and wheat was an average 45%, including a range of average humidity of 31 to 67% during the day, which is less than the EPA recommended range of 70±15% during light periods.
3. The physico-chemical properties of the test material were not reported.

**E. REVIEWER'S COMMENTS:**

The reviewer and study author selected similarly sensitive, but slightly different dicot species. Monocot selections were identical. The most sensitive monocot was wheat based on dry weight, with NOEC and

## **Data Evaluation Record on the Acute Toxicity of GF-2726 (2,4-D Choline Salt + Glyphosate DMA) to Terrestrial Vascular Plants: Vegetative Vigor**

**PMRA Submission Number {.....}** **EPA MRID Number 49903202**

EC<sub>25</sub> values of 0.044 and 0.0711 lb 2,4-D Choline Salt/A, respectively; the most sensitive dicot was tomato based on dry weight, with NOEC and ER<sub>25</sub> values of 0.011 and 0.0145 lb 2,4-D Choline Salt/A, respectively. The study author concluded the most sensitive dicot to be mustard based on dry weight, with NOAEC and IC<sub>25</sub> values of 0.011 and 0.0145 lb 2,4-D Choline Salt/A, respectively. The reviewer's results are presented in the Executive Summary and Conclusions sections of this DER.

The reviewer selected the Jonckheere-Terpstra Step-Down test for trends analysis for buckwheat, corn, oat, onion, and sorghum height and/or dry weight because CETIS was not able to run the Williams test on more than 10 treatment levels.

The in-life portion of this study for corn, oat, grain sorghum, wheat, buckwheat, soybean, and sunflower was February 11, 2016 to March 3, 2016, and for onion, cabbage, cucumber, mustard, oilseed rape, radish, sugarbeet and tomato was February 24, 2016 to March 16, 2016.

### **F. CONCLUSIONS:**

This study is scientifically sound and is classified as acceptable. The most sensitive monocot was wheat based on dry weight with NOAEC and IC<sub>25</sub> values of 0.044 and 0.0711 lb 2,4-D Choline Salt/A, respectively. The most sensitive dicot was tomato based on dry weight with NOAEC and IC<sub>25</sub> values of 0.011 and 0.0145 lb 2,4-D Choline Salt/A, respectively.

Most sensitive monocot and IC<sub>25</sub>: Wheat (dry weight, 0.0711 lb 2,4-D Choline Salt/A)  
Most sensitive dicot and IC<sub>25</sub>: Tomato (dry weight, 0.0145 lb 2,4-D Choline Salt/A)

### **III. REFERENCES:**

1. U.S. Environmental Protection Agency - 1982. Pesticide Assessment Guidelines. Subdivision J. Hazard Evaluation: Non-Target Plants; Series 123-1 Seed germination/vegetative vigor and vegetative vigor (Tier 2).
2. U.S. Environmental Protection Agency, Series 850- Ecological Effects Test Guidelines, OCSPP Number 850.4100: Vegetative vigor and Seedling Growth. 2012.
3. Frans, R.E. and Talbert, R.E., Design of Field Experiments and the Measurement and Analysis of Plant Responses. Pages 15-23 in B. Truelove, ed. Research Methods in Weed Science. Southern Weed Science Society, Auburn University, Alabama, 1977.
4. Bergfield, A. 2016. "GF-2726 (2,4-D Choline Salt, 286 g a.s./L; Glyphosate Dimethylammonium 260 g a.s./L SL): Effects on the Seedling Emergence and Growth of Non-Target Terrestrial Plants (Tier II)" ABC Laboratories, Inc. Study No. 83625, Dow AgroSciences Study No. 160304.

**CETIS Summary Report**

**Report Date:** 08 Jun-16 09:17 (p 1 of 3)  
**Test Code:** 49903202 buckwh | 02-3934-3694

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 01-8608-6805        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:49  | <b>Species:</b> Fagopyrum esculentum                   | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Johnny's Selected Seeds, ME             | <b>Age:</b>                         |
| <b>Sample ID:</b> 20-9626-7896       | <b>Code:</b> 49903202 buckwh                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:49 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| Analysis ID  | Endpoint | NOEL   | LOEL   | TOEL    | PMSD  | TU | Method                             |
|--------------|----------|--------|--------|---------|-------|----|------------------------------------|
| 06-7077-4381 | Height   | 0.0221 | 0.044  | 0.03118 | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 01-3959-8201 | Height   | 0.011  | 0.0221 | 0.01559 | 10.6% |    | Dunnett Multiple Comparison Test   |
| 01-6382-8453 | Survival | 0.71   | 1.42   | 1.004   | 12.8% |    | Mann-Whitney U Two-Sample Test     |
| 12-6147-7706 | Weight   | 0.011  | 0.0221 | 0.01559 | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 06-8519-2970 | Weight   | 0.011  | 0.0221 | 0.01559 | 9.07% |    | Mann-Whitney U Two-Sample Test     |

**Point Estimate Summary**

| Analysis ID  | Endpoint | Level | Ibs ai/A | 95% LCL  | 95% UCL | TU | Method                  |
|--------------|----------|-------|----------|----------|---------|----|-------------------------|
| 19-0339-4777 | Height   | IC5   | 0.00168  | 0.000102 | 0.00399 |    | Nonlinear Regression    |
|              |          | IC10  | 0.00415  | 0.00214  | 0.00678 |    |                         |
|              |          | IC25  | 0.0188   | 0.0136   | 0.0253  |    |                         |
|              |          | IC50  | 0.101    | 0.0826   | 0.122   |    |                         |
| 01-4454-2001 | Survival | EC5   | 0.434    | 0.19     | 0.614   |    | Linear Regression (MLE) |
|              |          | EC10  | 0.606    | 0.35     | 0.818   |    |                         |
|              |          | EC25  | 1.06     | 0.781    | 1.64    |    |                         |
|              |          | EC50  | 1.96     | 1.35     | 4.99    |    |                         |
| 06-3273-2792 | Weight   | IC5   | 0.002    | 0.000124 | 0.0044  |    | Nonlinear Regression    |
|              |          | IC10  | 0.00451  | 0.00243  | 0.00709 |    |                         |
|              |          | IC25  | 0.0174   | 0.0129   | 0.023   |    |                         |
|              |          | IC50  | 0.0785   | 0.0648   | 0.0951  |    |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 09:17 (p 2 of 3)

**Test Code:**

49903202 buckwh | 02-3934-3694

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 759         | 679            | 839            | 684        | 867        | 31.1           | 76.2           | 10.0%      | 0.0%           |
| 0.00138           |                     | 6            | 746         | 671            | 821            | 694        | 843        | 29.1           | 71.4           | 9.57%      | 1.71%          |
| 0.0027            |                     | 6            | 771         | 710            | 832            | 713        | 877        | 23.7           | 58             | 7.52%      | -1.65%         |
| 0.0055            |                     | 6            | 762         | 716            | 808            | 728        | 842        | 17.7           | 43.5           | 5.7%       | -0.44%         |
| 0.011             |                     | 6            | 770         | 736            | 804            | 725        | 813        | 13.3           | 32.5           | 4.22%      | -1.45%         |
| 0.0221            |                     | 6            | 624         | 548            | 699            | 480        | 672        | 29.3           | 71.7           | 11.5%      | 17.8%          |
| 0.044             |                     | 6            | 498         | 424            | 571            | 416        | 607        | 28.5           | 69.9           | 14.1%      | 34.4%          |
| 0.088             |                     | 6            | 450         | 394            | 506            | 357        | 510        | 21.8           | 53.3           | 11.9%      | 40.7%          |
| 0.176             |                     | 6            | 249         | 194            | 303            | 173        | 313        | 21.3           | 52.1           | 21.0%      | 67.2%          |
| 0.35              |                     | 6            | 203         | 175            | 230            | 157        | 234        | 10.6           | 26.1           | 12.9%      | 73.3%          |
| 0.71              |                     | 6            | 164         | 133            | 196            | 132        | 220        | 12.2           | 29.8           | 18.1%      | 78.3%          |
| 1.42              |                     | 6            | 179         | 137            | 221            | 142        | 242        | 16.3           | 39.9           | 22.3%      | 76.4%          |

**Survival Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.00138           |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0027            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0055            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.011             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0221            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.044             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.088             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.176             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.35              |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.71              |                     | 6            | 0.767       | 0.488          | 1              | 0.4        | 1          | 0.109          | 0.266          | 34.7%      | 23.3%          |
| 1.42              |                     | 6            | 0.7         | 0.355          | 1              | 0.2        | 1          | 0.134          | 0.329          | 46.9%      | 30.0%          |

**Weight Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1.99        | 1.67           | 2.31           | 1.52       | 2.44       | 0.124          | 0.304          | 15.3%      | 0.0%           |
| 0.00138           |                     | 6            | 2.06        | 1.89           | 2.22           | 1.83       | 2.25       | 0.0647         | 0.159          | 7.71%      | -3.43%         |
| 0.0027            |                     | 6            | 1.89        | 1.72           | 2.07           | 1.67       | 2.13       | 0.0674         | 0.165          | 8.73%      | 4.82%          |
| 0.0055            |                     | 6            | 1.89        | 1.67           | 2.1            | 1.63       | 2.2        | 0.0832         | 0.204          | 10.8%      | 5.05%          |
| 0.011             |                     | 6            | 1.98        | 1.77           | 2.2            | 1.66       | 2.21       | 0.0831         | 0.203          | 10.3%      | 0.14%          |
| 0.0221            |                     | 6            | 1.57        | 1.41           | 1.72           | 1.41       | 1.84       | 0.0598         | 0.147          | 9.35%      | 21.1%          |
| 0.044             |                     | 6            | 1.25        | 1              | 1.49           | 0.905      | 1.56       | 0.0956         | 0.234          | 18.7%      | 37.2%          |
| 0.088             |                     | 6            | 1.06        | 0.882          | 1.25           | 0.902      | 1.28       | 0.0708         | 0.173          | 16.3%      | 46.5%          |
| 0.176             |                     | 6            | 0.63        | 0.525          | 0.735          | 0.486      | 0.782      | 0.0409         | 0.1            | 15.9%      | 68.3%          |
| 0.35              |                     | 6            | 0.407       | 0.329          | 0.485          | 0.32       | 0.521      | 0.0303         | 0.0741         | 18.2%      | 79.5%          |
| 0.71              |                     | 6            | 0.277       | 0.237          | 0.317          | 0.224      | 0.331      | 0.0156         | 0.0382         | 13.8%      | 86.1%          |
| 1.42              |                     | 6            | 0.349       | 0.273          | 0.424          | 0.251      | 0.45       | 0.0293         | 0.0718         | 20.6%      | 82.5%          |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:17 (p 3 of 3)

Test Code:

49903202 buckwh | 02-3934-3694

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 684   | 684   | 729   | 867   | 831   | 757   |
| 0.00138    |                  | 696   | 832   | 694   | 843   | 701   | 708   |
| 0.0027     |                  | 713   | 725   | 771   | 763   | 877   | 778   |
| 0.0055     |                  | 842   | 752   | 737   | 733   | 780   | 728   |
| 0.011      |                  | 740   | 788   | 769   | 783   | 813   | 725   |
| 0.0221     |                  | 480   | 644   | 651   | 672   | 663   | 631   |
| 0.044      |                  | 493   | 416   | 504   | 431   | 534   | 607   |
| 0.088      |                  | 357   | 481   | 476   | 437   | 437   | 510   |
| 0.176      |                  | 238   | 173   | 225   | 239   | 313   | 303   |
| 0.35       |                  | 234   | 195   | 211   | 217   | 157   | 203   |
| 0.71       |                  | 166   | 132   | 149   | 220   | 157   | 162   |
| 1.42       |                  | 175   | 160   | 144   | 242   | 142   | 211   |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.35       |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.71       |                  | 1     | 0.6   | 1     | 1     | 0.4   | 0.6   |
| 1.42       |                  | 0.8   | 1     | 0.4   | 0.2   | 1     | 0.8   |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 2.44  | 1.52  | 2.02  | 2.12  | 1.84  | 1.99  |
| 0.00138    |                  | 1.83  | 2.13  | 2.13  | 2.25  | 1.9   | 2.09  |
| 0.0027     |                  | 1.97  | 1.96  | 1.67  | 1.85  | 2.13  | 1.77  |
| 0.0055     |                  | 2.2   | 1.99  | 1.82  | 1.96  | 1.73  | 1.63  |
| 0.011      |                  | 2.21  | 2.07  | 1.85  | 2.14  | 1.98  | 1.66  |
| 0.0221     |                  | 1.41  | 1.61  | 1.49  | 1.52  | 1.84  | 1.54  |
| 0.044      |                  | 1.12  | 0.905 | 1.33  | 1.17  | 1.41  | 1.56  |
| 0.088      |                  | 1.28  | 0.954 | 0.918 | 0.902 | 1.06  | 1.28  |
| 0.176      |                  | 0.486 | 0.583 | 0.601 | 0.688 | 0.641 | 0.782 |
| 0.35       |                  | 0.444 | 0.32  | 0.376 | 0.435 | 0.346 | 0.521 |
| 0.71       |                  | 0.263 | 0.261 | 0.272 | 0.224 | 0.309 | 0.331 |
| 1.42       |                  | 0.381 | 0.297 | 0.325 | 0.45  | 0.251 | 0.388 |

**CETIS Summary Report****Report Date:**

08 Jun-16 09:22 (p 1 of 3)

**Test Code:**

49903202 cabbag | 19-7500-3016

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 09-5748-7650        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:53  | <b>Species:</b> Brassica oleracea                      | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Sustainable Seed Co., CA                | <b>Age:</b>                         |
| <b>Sample ID:</b> 11-6929-8183       | <b>Code:</b> 49903202 cabbag                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:53 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 10-0469-0477       | Height          | 0.044       | 0.088       | 0.06223     | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 00-4912-7520       | Height          | 0.044       | 0.088       | 0.06223     | 9.12%       |           | Mann-Whitney U Two-Sample Test     |
| 18-9958-0069       | Survival        | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 16-8388-2962       | Survival        | 0.37        | 0.73        | 0.5197      | 9.1%        |           | Mann-Whitney U Two-Sample Test     |
| 09-7985-6156       | Weight          | 0.0027      | 0.0055      | 0.003854    | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 05-2151-5366       | Weight          | 0.0055      | 0.011       | 0.007778    | 11.0%       |           | Mann-Whitney U Two-Sample Test     |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>lbs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 02-1276-6109       | Height          | IC5          | 0.0063          | 0.00145        | 0.0126         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0149          | 0.00805        | 0.0235         |           |                         |
|                    |                 | IC25         | 0.0625          | 0.0444         | 0.0854         |           |                         |
|                    |                 | IC50         | 0.308           | 0.253          | 0.376          |           |                         |
| 09-5845-6847       | Survival        | EC5          | 0.346           | 0.212          | 0.454          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.433           | 0.292          | 0.545          |           |                         |
|                    |                 | EC25         | 0.629           | 0.488          | 0.758          |           |                         |
|                    |                 | EC50         | 0.952           | 0.791          | 1.19           |           |                         |
| 04-3413-0282       | Survival        | EC50         | 0.986           | 0.802          | 1.21           |           | Trimmed Spearman-Kärber |
| 05-5637-8920       | Weight          | IC5          | 0.00654         | N/A            | 0.012          |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0115          | 0.00611        | 0.0173         |           |                         |
|                    |                 | IC25         | 0.0294          | 0.0211         | 0.0392         |           |                         |
|                    |                 | IC50         | 0.0835          | 0.0677         | 0.103          |           |                         |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:22 (p 2 of 3)

Test Code:

49903202 cabbag | 19-7500-3016

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 189  | 161     | 217     | 162 | 235 | 11.1    | 27.1    | 14.3% | 0.0%    |
| 0.00138    |                  | 6     | 171  | 151     | 190     | 149 | 202 | 7.72    | 18.9    | 11.1% | 9.79%   |
| 0.0027     |                  | 6     | 184  | 166     | 202     | 162 | 210 | 7.04    | 17.2    | 9.36% | 2.56%   |
| 0.0055     |                  | 6     | 186  | 179     | 194     | 177 | 193 | 2.87    | 7.03    | 3.77% | 1.5%    |
| 0.011      |                  | 6     | 183  | 167     | 198     | 161 | 200 | 6.05    | 14.8    | 8.11% | 3.35%   |
| 0.0221     |                  | 6     | 191  | 179     | 202     | 170 | 202 | 4.58    | 11.2    | 5.89% | -0.79%  |
| 0.044      |                  | 6     | 179  | 161     | 198     | 164 | 212 | 7.18    | 17.6    | 9.81% | 5.2%    |
| 0.088      |                  | 6     | 128  | 118     | 137     | 118 | 140 | 3.68    | 9.03    | 7.07% | 32.5%   |
| 0.176      |                  | 6     | 93   | 81.1    | 105     | 84  | 114 | 4.62    | 11.3    | 12.2% | 50.8%   |
| 0.37       |                  | 6     | 77.7 | 70.3    | 85.1    | 64  | 84  | 2.88    | 7.06    | 9.09% | 58.9%   |
| 0.73       |                  | 6     | 62.2 | 55.8    | 68.5    | 52  | 69  | 2.47    | 6.05    | 9.73% | 67.1%   |
| 1.46       |                  | 4     | 71.8 | 66.7    | 76.8    | 67  | 74  | 1.6     | 3.2     | 4.46% | 62.0%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.00138    |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0027     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0055     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.011      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0221     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.044      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.088      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.176      |                  | 6     | 0.967 | 0.881   | 1       | 0.8 | 1   | 0.0333  | 0.0816  | 8.45% | 3.33%   |
| 0.37       |                  | 6     | 0.967 | 0.881   | 1       | 0.8 | 1   | 0.0333  | 0.0816  | 8.45% | 3.33%   |
| 0.73       |                  | 6     | 0.767 | 0.521   | 1       | 0.4 | 1   | 0.0955  | 0.234   | 30.5% | 23.3%   |
| 1.46       |                  | 6     | 0.167 | 0.00867 | 0.325   | 0   | 0.4 | 0.0615  | 0.151   | 90.3% | 83.3%   |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min    | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|--------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1.76  | 1.49    | 2.04    | 1.47   | 2.15  | 0.106   | 0.26    | 14.7% | 0.0%    |
| 0.00138    |                  | 6     | 1.67  | 1.5     | 1.85    | 1.4    | 1.86  | 0.0683  | 0.167   | 10.0% | 5.12%   |
| 0.0027     |                  | 6     | 1.6   | 1.5     | 1.69    | 1.5    | 1.71  | 0.0364  | 0.0891  | 5.58% | 9.39%   |
| 0.0055     |                  | 6     | 1.49  | 1.3     | 1.68    | 1.24   | 1.73  | 0.0743  | 0.182   | 12.2% | 15.4%   |
| 0.011      |                  | 6     | 1.48  | 1.38    | 1.59    | 1.33   | 1.62  | 0.0396  | 0.0971  | 6.54% | 15.8%   |
| 0.0221     |                  | 6     | 1.49  | 1.3     | 1.68    | 1.33   | 1.75  | 0.0721  | 0.177   | 11.9% | 15.5%   |
| 0.044      |                  | 6     | 1.53  | 1.26    | 1.8     | 1.2    | 1.9   | 0.105   | 0.257   | 16.9% | 13.4%   |
| 0.088      |                  | 6     | 0.733 | 0.496   | 0.969   | 0.418  | 1.05  | 0.0921  | 0.226   | 30.8% | 58.4%   |
| 0.176      |                  | 6     | 0.336 | 0.292   | 0.379   | 0.285  | 0.399 | 0.017   | 0.0415  | 12.4% | 81.0%   |
| 0.37       |                  | 6     | 0.23  | 0.163   | 0.298   | 0.157  | 0.33  | 0.0262  | 0.0641  | 27.9% | 86.9%   |
| 0.73       |                  | 6     | 0.133 | 0.0976  | 0.168   | 0.0926 | 0.195 | 0.0138  | 0.0337  | 25.3% | 92.5%   |
| 1.46       |                  | 4     | 0.159 | 0.129   | 0.19    | 0.137  | 0.183 | 0.00968 | 0.0194  | 12.1% | 91.0%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:22 (p 3 of 3)

Test Code:

49903202 cabbag | 19-7500-3016

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 162   | 235   | 185   | 162   | 196   | 194   |
| 0.00138    |                  | 182   | 202   | 169   | 160   | 149   | 161   |
| 0.0027     |                  | 197   | 178   | 210   | 185   | 173   | 162   |
| 0.0055     |                  | 177   | 178   | 190   | 187   | 192   | 193   |
| 0.011      |                  | 169   | 185   | 193   | 161   | 200   | 188   |
| 0.0221     |                  | 189   | 196   | 202   | 197   | 189   | 170   |
| 0.044      |                  | 164   | 212   | 182   | 174   | 165   | 178   |
| 0.088      |                  | 131   | 140   | 123   | 135   | 119   | 118   |
| 0.176      |                  | 114   | 85    | 95    | 84    | 86    | 94    |
| 0.37       |                  | 78    | 82    | 79    | 84    | 79    | 64    |
| 0.73       |                  | 69    | 66    | 65    | 62    | 59    | 52    |
| 1.46       |                  |       | 73    | 74    | 67    | 73    |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 0.8   | 1     | 1     | 1     | 1     |
| 0.37       |                  | 1     | 1     | 0.8   | 1     | 1     | 1     |
| 0.73       |                  | 0.4   | 0.8   | 0.6   | 1     | 0.8   | 1     |
| 1.46       |                  | 0     | 0.4   | 0.2   | 0.2   | 0.2   | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6  |
|------------|------------------|-------|-------|-------|-------|-------|--------|
| 0          | Negative Control | 2     | 1.47  | 1.73  | 2.15  | 1.57  | 1.66   |
| 0.00138    |                  | 1.82  | 1.4   | 1.72  | 1.86  | 1.65  | 1.58   |
| 0.0027     |                  | 1.65  | 1.67  | 1.54  | 1.52  | 1.5   | 1.71   |
| 0.0055     |                  | 1.48  | 1.67  | 1.44  | 1.73  | 1.24  | 1.38   |
| 0.011      |                  | 1.54  | 1.33  | 1.47  | 1.49  | 1.62  | 1.46   |
| 0.0221     |                  | 1.75  | 1.33  | 1.42  | 1.35  | 1.67  | 1.41   |
| 0.044      |                  | 1.7   | 1.57  | 1.9   | 1.47  | 1.31  | 1.2    |
| 0.088      |                  | 1.05  | 0.77  | 0.9   | 0.644 | 0.418 | 0.61   |
| 0.176      |                  | 0.399 | 0.285 | 0.35  | 0.348 | 0.294 | 0.338  |
| 0.37       |                  | 0.33  | 0.274 | 0.192 | 0.24  | 0.188 | 0.157  |
| 0.73       |                  | 0.136 | 0.122 | 0.129 | 0.195 | 0.124 | 0.0926 |
| 1.46       |                  | 0.137 | 0.183 | 0.153 | 0.165 |       |        |

**CETIS Summary Report****Report Date:**

08 Jun-16 09:39 (p 1 of 3)

**Test Code:**

49903202 corn | 10-9073-8153

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                |  |                                     |
|--------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 16-1224-1568  | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16   | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b>            | <b>Species:</b> Zea mays                               | <b>Brine:</b>                       |
| <b>Duration:</b> NA            | <b>Source:</b> Syngenta Seed Care                      | <b>Age:</b>                         |
| <b>Sample ID:</b> 09-0359-1494 | <b>Code:</b> 49903202 corn                             | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16  | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b>           | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA          | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 03-1683-3943       | Height          | 0.176       | 0.35        | 0.2482      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 00-1354-2379       | Height          | 0.176       | 0.35        | 0.2482      | 11.3%       |           | Dunnett Multiple Comparison Test   |
| 19-1163-3046       | Survival        | 1.42        | >1.42       | NA          | NA          |           | Mann-Whitney U Two-Sample Test     |
| 02-1176-3678       | Weight          | 0.176       | 0.35        | 0.2482      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 01-2848-8734       | Weight          | 0.176       | 0.35        | 0.2482      | 14.8%       |           | Dunnett Multiple Comparison Test   |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>        |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|----------------------|
| 06-4306-5660       | Weight          | IC5          | 0.0644          | N/A            | 0.0909         |           | Nonlinear Regression |
|                    |                 | IC10         | 0.0907          | 0.0576         | 0.119          |           |                      |
|                    |                 | IC25         | 0.161           | 0.125          | 0.199          |           |                      |
|                    |                 | IC50         | 0.304           | 0.261          | 0.354          |           |                      |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:39 (p 2 of 3)

Test Code:

49903202 corn | 10-9073-8153

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 760  | 724     | 795     | 704 | 798 | 13.9    | 33.9    | 4.47% | 0.0%    |
| 0.00138    |                  | 6     | 782  | 729     | 835     | 704 | 844 | 20.7    | 50.8    | 6.49% | -2.92%  |
| 0.0027     |                  | 6     | 763  | 685     | 840     | 621 | 822 | 30.3    | 74.1    | 9.72% | -0.37%  |
| 0.0055     |                  | 6     | 768  | 688     | 847     | 647 | 864 | 30.9    | 75.8    | 9.87% | -1.01%  |
| 0.011      |                  | 6     | 757  | 700     | 813     | 690 | 825 | 21.8    | 53.5    | 7.07% | 0.44%   |
| 0.0221     |                  | 6     | 734  | 687     | 780     | 690 | 800 | 18.1    | 44.4    | 6.04% | 3.42%   |
| 0.044      |                  | 6     | 747  | 656     | 838     | 624 | 850 | 35.4    | 86.7    | 11.6% | 1.69%   |
| 0.088      |                  | 6     | 765  | 747     | 783     | 744 | 787 | 7.06    | 17.3    | 2.26% | -0.64%  |
| 0.176      |                  | 6     | 747  | 687     | 807     | 671 | 819 | 23.3    | 57.1    | 7.64% | 1.65%   |
| 0.35       |                  | 6     | 538  | 449     | 627     | 419 | 647 | 34.7    | 85.1    | 15.8% | 29.2%   |
| 0.71       |                  | 6     | 181  | 165     | 197     | 169 | 211 | 6.24    | 15.3    | 8.43% | 76.2%   |
| 1.42       |                  | 6     | 199  | 141     | 257     | 146 | 277 | 22.7    | 55.6    | 28.0% | 73.8%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%  | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|------|---------|
| 0          | Negative Control | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.00138    |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0027     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0055     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.011      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0221     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.044      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.088      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.176      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.35       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.71       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 1.42       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min    | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|--------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1.42  | 1.26    | 1.59    | 1.18   | 1.61  | 0.0641  | 0.157   | 11.0% | 0.0%    |
| 0.00138    |                  | 6     | 1.4   | 1.2     | 1.6     | 1.12   | 1.68  | 0.0779  | 0.191   | 13.7% | 1.65%   |
| 0.0027     |                  | 6     | 1.46  | 1.28    | 1.64    | 1.32   | 1.81  | 0.0707  | 0.173   | 11.9% | -2.88%  |
| 0.0055     |                  | 6     | 1.45  | 1.31    | 1.6     | 1.3    | 1.69  | 0.0564  | 0.138   | 9.52% | -2.11%  |
| 0.011      |                  | 6     | 1.44  | 1.29    | 1.59    | 1.27   | 1.62  | 0.0594  | 0.146   | 10.1% | -1.32%  |
| 0.0221     |                  | 6     | 1.44  | 1.36    | 1.52    | 1.35   | 1.55  | 0.0318  | 0.0778  | 5.4%  | -1.51%  |
| 0.044      |                  | 6     | 1.43  | 1.24    | 1.61    | 1.12   | 1.65  | 0.0721  | 0.177   | 12.4% | -0.43%  |
| 0.088      |                  | 6     | 1.43  | 1.3     | 1.56    | 1.23   | 1.6   | 0.0502  | 0.123   | 8.6%  | -0.64%  |
| 0.176      |                  | 6     | 1.25  | 1.16    | 1.34    | 1.09   | 1.35  | 0.0361  | 0.0883  | 7.06% | 11.8%   |
| 0.35       |                  | 6     | 0.552 | 0.332   | 0.772   | 0.295  | 0.89  | 0.0855  | 0.209   | 37.9% | 61.1%   |
| 0.71       |                  | 6     | 0.133 | 0.114   | 0.152   | 0.119  | 0.166 | 0.00734 | 0.018   | 13.5% | 90.6%   |
| 1.42       |                  | 6     | 0.155 | 0.0458  | 0.264   | 0.0778 | 0.293 | 0.0424  | 0.104   | 67.1% | 89.1%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:39 (p 3 of 3)

Test Code:

49903202 corn | 10-9073-8153

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 798   | 704   | 781   | 780   | 753   | 743   |
| 0.00138    |                  | 825   | 844   | 791   | 704   | 778   | 750   |
| 0.0027     |                  | 799   | 812   | 769   | 621   | 753   | 822   |
| 0.0055     |                  | 740   | 864   | 800   | 739   | 815   | 647   |
| 0.011      |                  | 825   | 797   | 690   | 783   | 707   | 737   |
| 0.0221     |                  | 701   | 690   | 712   | 723   | 800   | 777   |
| 0.044      |                  | 763   | 766   | 850   | 624   | 665   | 814   |
| 0.088      |                  | 772   | 787   | 776   | 745   | 744   | 764   |
| 0.176      |                  | 787   | 819   | 733   | 696   | 671   | 778   |
| 0.35       |                  | 544   | 647   | 419   | 617   | 478   | 522   |
| 0.71       |                  | 169   | 178   | 211   | 173   | 182   | 174   |
| 1.42       |                  | 277   | 158   | 146   | 175   | 261   | 177   |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.35       |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.71       |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 1.42       |                  | 1     | 1     | 1     | 1     | 1     | 1     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2  | Rep 3  | Rep 4  | Rep 5 | Rep 6  |
|------------|------------------|-------|--------|--------|--------|-------|--------|
| 0          | Negative Control | 1.37  | 1.57   | 1.18   | 1.36   | 1.61  | 1.43   |
| 0.00138    |                  | 1.5   | 1.68   | 1.34   | 1.12   | 1.45  | 1.29   |
| 0.0027     |                  | 1.41  | 1.4    | 1.81   | 1.32   | 1.41  | 1.41   |
| 0.0055     |                  | 1.3   | 1.51   | 1.47   | 1.36   | 1.69  | 1.37   |
| 0.011      |                  | 1.45  | 1.28   | 1.62   | 1.44   | 1.27  | 1.58   |
| 0.0221     |                  | 1.55  | 1.35   | 1.46   | 1.42   | 1.37  | 1.51   |
| 0.044      |                  | 1.39  | 1.4    | 1.47   | 1.12   | 1.53  | 1.65   |
| 0.088      |                  | 1.23  | 1.48   | 1.4    | 1.39   | 1.48  | 1.6    |
| 0.176      |                  | 1.22  | 1.28   | 1.35   | 1.09   | 1.26  | 1.3    |
| 0.35       |                  | 0.89  | 0.613  | 0.295  | 0.638  | 0.47  | 0.408  |
| 0.71       |                  | 0.119 | 0.121  | 0.166  | 0.127  | 0.124 | 0.141  |
| 1.42       |                  | 0.285 | 0.0778 | 0.0837 | 0.0937 | 0.293 | 0.0966 |

**CETIS Summary Report****Report Date:**

08 Jun-16 09:50 (p 1 of 3)

**Test Code:**

49903202 cucumb | 10-4998-4382

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 17-1554-8107        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:54  | <b>Species:</b> Cucumis sativus                        | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> NE Seed                                 | <b>Age:</b>                         |
| <b>Sample ID:</b> 13-4015-5038       | <b>Code:</b> 49903202 cucumb                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:54 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| Analysis ID  | Endpoint | NOEL   | LOEL   | TOEL     | PMSD  | TU | Method                             |
|--------------|----------|--------|--------|----------|-------|----|------------------------------------|
| 01-7159-0055 | Height   | 0.0221 | 0.044  | 0.03118  | 17.9% |    | Dunnnett Multiple Comparison Test  |
| 18-3833-3208 | Height   | 0.0027 | 0.0055 | 0.003854 | 12.8% |    | Williams Multiple Comparison Test  |
| 09-0995-6589 | Survival | 0.176  | 0.37   | 0.2552   | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 01-9357-1991 | Survival | 0.176  | 0.37   | 0.2552   | 5.89% |    | Mann-Whitney U Two-Sample Test     |
| 07-6247-2084 | Weight   | 0.0221 | 0.044  | 0.03118  | 13.8% |    | Dunnett Multiple Comparison Test   |
| 07-4668-4991 | Weight   | 0.0055 | 0.011  | 0.007778 | 9.88% |    | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| Analysis ID  | Endpoint | Level | lbs ai/A | 95% LCL | 95% UCL | TU | Method               |
|--------------|----------|-------|----------|---------|---------|----|----------------------|
| 13-5641-3522 | Height   | IC5   | 0.024    | 0.00988 | 0.0325  |    | Nonlinear Regression |
|              |          | IC10  | 0.0331   | 0.0229  | 0.042   |    |                      |
|              |          | IC25  | 0.0568   | 0.0462  | 0.068   |    |                      |
|              |          | IC50  | 0.103    | 0.0915  | 0.117   |    |                      |
| 19-0850-1380 | Survival | EC50  | 0.293    | 0.267   | 0.322   |    | Spearman-Kärber      |
| 02-7874-5527 | Weight   | IC5   | 0.0179   | 0.00955 | 0.0244  |    | Nonlinear Regression |
|              |          | IC10  | 0.0267   | 0.0192  | 0.0338  |    |                      |
|              |          | IC25  | 0.052    | 0.0429  | 0.0617  |    |                      |
|              |          | IC50  | 0.109    | 0.0975  | 0.122   |    |                      |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:50 (p 2 of 3)

Test Code:

49903202 cucumb | 10-4998-4382

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 675  | 600     | 750     | 575 | 734 | 29.1    | 71.4    | 10.6% | 0.0%    |
| 0.00138    |                  | 6     | 582  | 513     | 651     | 513 | 700 | 26.8    | 65.6    | 11.3% | 13.8%   |
| 0.0027     |                  | 6     | 675  | 588     | 762     | 562 | 813 | 33.7    | 82.5    | 12.2% | -0.02%  |
| 0.0055     |                  | 6     | 577  | 511     | 642     | 525 | 670 | 25.4    | 62.2    | 10.8% | 14.6%   |
| 0.011      |                  | 6     | 592  | 465     | 719     | 461 | 806 | 49.4    | 121     | 20.5% | 12.3%   |
| 0.0221     |                  | 6     | 581  | 523     | 640     | 496 | 649 | 22.8    | 55.9    | 9.61% | 13.9%   |
| 0.044      |                  | 6     | 521  | 436     | 606     | 382 | 626 | 33      | 80.8    | 15.5% | 22.8%   |
| 0.088      |                  | 6     | 380  | 304     | 456     | 310 | 496 | 29.4    | 72      | 18.9% | 43.7%   |
| 0.176      |                  | 6     | 146  | 79.7    | 212     | 67  | 223 | 25.7    | 63      | 43.2% | 78.4%   |
| 0.37       |                  | 4     | 57.5 | 35.9    | 79.1    | 44  | 72  | 6.8     | 13.6    | 23.7% | 91.5%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%    | %Effect |
|------------|------------------|-------|-------|---------|---------|-----|-----|---------|---------|--------|---------|
| 0          | Negative Control | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.00138    |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0027     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0055     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.011      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0221     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.044      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.088      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.176      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.37       |                  | 6     | 0.194 | 0       | 0.399   | 0   | 0.5 | 0.0795  | 0.195   | 100.0% | 80.6%   |
| 0.73       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |
| 1.46       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 3.65  | 3.47    | 3.82    | 3.35  | 3.8   | 0.0691  | 0.169   | 4.64% | 0.0%    |
| 0.00138    |                  | 6     | 3.64  | 3.42    | 3.87    | 3.53  | 4.08  | 0.0873  | 0.214   | 5.87% | 0.04%   |
| 0.0027     |                  | 6     | 3.68  | 3.28    | 4.08    | 3.02  | 4.2   | 0.156   | 0.383   | 10.4% | -0.87%  |
| 0.0055     |                  | 6     | 3.35  | 3.19    | 3.5     | 3.22  | 3.59  | 0.0606  | 0.148   | 4.43% | 8.15%   |
| 0.011      |                  | 6     | 3.29  | 3.05    | 3.52    | 2.88  | 3.54  | 0.0925  | 0.227   | 6.9%  | 9.89%   |
| 0.0221     |                  | 6     | 3.27  | 2.75    | 3.78    | 2.57  | 3.96  | 0.199   | 0.488   | 14.9% | 10.4%   |
| 0.044      |                  | 6     | 2.86  | 2.55    | 3.17    | 2.4   | 3.24  | 0.12    | 0.294   | 10.3% | 21.5%   |
| 0.088      |                  | 6     | 2.18  | 1.79    | 2.57    | 1.8   | 2.76  | 0.152   | 0.372   | 17.1% | 40.2%   |
| 0.176      |                  | 6     | 1.04  | 0.648   | 1.43    | 0.591 | 1.57  | 0.152   | 0.373   | 35.9% | 71.5%   |
| 0.37       |                  | 4     | 0.528 | 0.106   | 0.951   | 0.227 | 0.812 | 0.133   | 0.266   | 50.3% | 85.5%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:50 (p 3 of 3)

Test Code:

49903202 cucumb | 10-4998-4382

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 734   | 601   | 730   | 575   | 675   | 734   |
| 0.00138    |                  | 700   | 604   | 579   | 552   | 513   | 544   |
| 0.0027     |                  | 813   | 689   | 638   | 656   | 562   | 692   |
| 0.0055     |                  | 670   | 549   | 640   | 530   | 545   | 525   |
| 0.011      |                  | 806   | 559   | 461   | 505   | 633   | 588   |
| 0.0221     |                  | 625   | 556   | 496   | 649   | 605   | 556   |
| 0.044      |                  | 560   | 626   | 516   | 541   | 382   | 502   |
| 0.088      |                  | 496   | 435   | 344   | 371   | 310   | 324   |
| 0.176      |                  | 130   | 203   | 223   | 167   | 85    | 67    |
| 0.37       |                  | 44    | 48    |       | 66    |       | 72    |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.37       |                  | 0.167 | 0.333 | 0     | 0.5   | 0     | 0.167 |
| 0.73       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.46       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 3.8   | 3.63  | 3.58  | 3.77  | 3.35  | 3.75  |
| 0.00138    |                  | 3.55  | 3.53  | 4.08  | 3.61  | 3.54  | 3.56  |
| 0.0027     |                  | 3.79  | 3.69  | 3.59  | 4.2   | 3.02  | 3.78  |
| 0.0055     |                  | 3.24  | 3.22  | 3.28  | 3.59  | 3.3   | 3.47  |
| 0.011      |                  | 3.36  | 3.54  | 3.43  | 2.88  | 3.28  | 3.22  |
| 0.0221     |                  | 2.57  | 3.12  | 3.54  | 3.96  | 3.45  | 2.96  |
| 0.044      |                  | 2.4   | 3.09  | 2.8   | 3.24  | 2.93  | 2.71  |
| 0.088      |                  | 2.76  | 2.36  | 2.33  | 1.99  | 1.8   | 1.83  |
| 0.176      |                  | 0.71  | 1.57  | 1.35  | 1.07  | 0.947 | 0.591 |
| 0.37       |                  | 0.812 | 0.396 |       | 0.679 |       | 0.227 |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 09:58 (p 1 of 3)

**Test Code:**

49903202 mustar | 05-0630-2475

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 08-5073-5169        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:55  | <b>Species:</b> Sinapis alba                           | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Johnny's Selected Seeds, ME             | <b>Age:</b>                         |
| <b>Sample ID:</b> 17-4264-0674       | <b>Code:</b> 49903202 mustar                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:55 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| Analysis ID  | Endpoint | NOEL   | LOEL   | TOEL     | PMSD  | TU | Method                             |
|--------------|----------|--------|--------|----------|-------|----|------------------------------------|
| 08-9348-4949 | Height   | 0.0055 | 0.011  | 0.007778 | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 14-4515-9241 | Height   | 0.0055 | 0.011  | 0.007778 | 7.37% |    | Mann-Whitney U Two-Sample Test     |
| 13-2457-9902 | Survival | 0.088  | 0.176  | 0.1245   | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 17-7291-1586 | Survival | 0.176  | 0.37   | 0.2552   | 11.7% |    | Mann-Whitney U Two-Sample Test     |
| 06-3447-9949 | Weight   | 0.011  | 0.0221 | 0.01559  | NA    |    | Jonckheere-Terpstra Step-Down Test |
| 14-5228-4746 | Weight   | 0.011  | 0.0221 | 0.01559  | 8.53% |    | Mann-Whitney U Two-Sample Test     |

**Point Estimate Summary**

| Analysis ID  | Endpoint | Level | Ibs ai/A | 95% LCL  | 95% UCL | TU | Method                  |
|--------------|----------|-------|----------|----------|---------|----|-------------------------|
| 15-4567-2299 | Height   | IC5   | 0.000333 | N/A      | 0.0015  |    | Nonlinear Regression    |
|              |          | IC10  | 0.000919 | 0.000197 | 0.00221 |    |                         |
|              |          | IC25  | 0.00501  | 0.00306  | 0.00777 |    |                         |
|              |          | IC50  | 0.0329   | 0.0246   | 0.044   |    |                         |
| 01-8569-0529 | Survival | EC5   | 0.107    | 0.0607   | 0.154   |    | Linear Regression (MLE) |
|              |          | EC10  | 0.154    | 0.0977   | 0.21    |    |                         |
|              |          | EC25  | 0.285    | 0.21     | 0.364   |    |                         |
|              |          | EC50  | 0.564    | 0.444    | 0.742   |    |                         |
| 11-7904-7519 | Survival | EC50  | 0.479    | 0.352    | 0.651   |    | Trimmed Spearman-Kärber |
| 10-1112-2099 | Weight   | IC5   | 0.00136  | N/A      | 0.00367 |    | Nonlinear Regression    |
|              |          | IC10  | 0.00277  | 0.000998 | 0.00502 |    |                         |
|              |          | IC25  | 0.00903  | 0.00605  | 0.0128  |    |                         |
|              |          | IC50  | 0.0336   | 0.0259   | 0.0435  |    |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 09:58 (p 2 of 3)

**Test Code:**

49903202 mustar | 05-0630-2475

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 609         | 542            | 676            | 513        | 683        | 26.1           | 63.9           | 10.5%      | 0.0%           |
| 0.00138           |                     | 6            | 574         | 513            | 635            | 484        | 643        | 23.7           | 58.2           | 10.1%      | 5.78%          |
| 0.0027            |                     | 6            | 587         | 552            | 621            | 528        | 620        | 13.5           | 33             | 5.63%      | 3.67%          |
| 0.0055            |                     | 6            | 603         | 570            | 637            | 556        | 631        | 13.1           | 32.1           | 5.33%      | 0.9%           |
| 0.011             |                     | 6            | 511         | 461            | 560            | 452        | 570        | 19.3           | 47.4           | 9.28%      | 16.2%          |
| 0.0221            |                     | 6            | 405         | 338            | 472            | 332        | 509        | 26.1           | 64             | 15.8%      | 33.5%          |
| 0.044             |                     | 6            | 306         | 269            | 342            | 244        | 339        | 14.1           | 34.6           | 11.3%      | 49.8%          |
| 0.088             |                     | 6            | 132         | 110            | 154            | 104        | 161        | 8.71           | 21.3           | 16.2%      | 78.3%          |
| 0.176             |                     | 6            | 116         | 102            | 130            | 99         | 131        | 5.44           | 13.3           | 11.5%      | 80.9%          |
| 0.37              |                     | 6            | 121         | 111            | 130            | 107        | 131        | 3.66           | 8.98           | 7.43%      | 80.2%          |
| 0.73              |                     | 4            | 101         | 89             | 113            | 93         | 111        | 3.84           | 7.68           | 7.58%      | 83.4%          |
| 1.46              |                     | 5            | 129         | 91.6           | 167            | 96         | 173        | 13.6           | 30.4           | 23.5%      | 78.7%          |

**Survival Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.00138           |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0027            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0055            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.011             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0221            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.044             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.088             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.176             |                     | 6            | 0.867       | 0.65           | 1              | 0.6        | 1          | 0.0843         | 0.207          | 23.8%      | 13.3%          |
| 0.37              |                     | 6            | 0.667       | 0.495          | 0.838          | 0.4        | 0.8        | 0.0667         | 0.163          | 24.5%      | 33.3%          |
| 0.73              |                     | 6            | 0.167       | 0.00867        | 0.325          | 0          | 0.4        | 0.0615         | 0.151          | 90.3%      | 83.3%          |
| 1.46              |                     | 6            | 0.333       | 0.0791         | 0.588          | 0          | 0.6        | 0.0989         | 0.242          | 72.7%      | 66.7%          |

**Weight Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1.9         | 1.69           | 2.11           | 1.63       | 2.22       | 0.0802         | 0.197          | 10.3%      | 0.0%           |
| 0.00138           |                     | 6            | 1.87        | 1.72           | 2.01           | 1.68       | 2.05       | 0.0567         | 0.139          | 7.43%      | 1.67%          |
| 0.0027            |                     | 6            | 1.92        | 1.72           | 2.12           | 1.57       | 2.14       | 0.0778         | 0.19           | 9.95%      | -0.79%         |
| 0.0055            |                     | 6            | 1.88        | 1.78           | 1.97           | 1.78       | 2.05       | 0.0383         | 0.0938         | 5.0%       | 1.29%          |
| 0.011             |                     | 6            | 1.71        | 1.51           | 1.91           | 1.44       | 1.96       | 0.0782         | 0.192          | 11.2%      | 9.92%          |
| 0.0221            |                     | 6            | 1.32        | 1.13           | 1.51           | 0.989      | 1.5        | 0.0738         | 0.181          | 13.7%      | 30.5%          |
| 0.044             |                     | 6            | 1.17        | 0.912          | 1.43           | 0.866      | 1.47       | 0.101          | 0.247          | 21.1%      | 38.3%          |
| 0.088             |                     | 6            | 0.304       | 0.236          | 0.372          | 0.188      | 0.372      | 0.0265         | 0.065          | 21.4%      | 84.0%          |
| 0.176             |                     | 6            | 0.193       | 0.147          | 0.24           | 0.135      | 0.272      | 0.0182         | 0.0446         | 23.1%      | 89.8%          |
| 0.37              |                     | 6            | 0.193       | 0.172          | 0.215          | 0.163      | 0.223      | 0.0085         | 0.0208         | 10.8%      | 89.8%          |
| 0.73              |                     | 4            | 0.196       | 0.128          | 0.263          | 0.133      | 0.222      | 0.0211         | 0.0423         | 21.6%      | 89.7%          |
| 1.46              |                     | 5            | 0.174       | 0.117          | 0.23           | 0.131      | 0.233      | 0.0202         | 0.0451         | 26.0%      | 90.9%          |

**CETIS Summary Report**

Report Date:

08 Jun-16 09:58 (p 3 of 3)

Test Code:

49903202 mustar | 05-0630-2475

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 513   | 608   | 601   | 675   | 573   | 683   |
| 0.00138    |                  | 622   | 643   | 541   | 558   | 484   | 594   |
| 0.0027     |                  | 576   | 609   | 603   | 528   | 583   | 620   |
| 0.0055     |                  | 556   | 606   | 627   | 628   | 631   | 572   |
| 0.011      |                  | 561   | 452   | 505   | 570   | 470   | 505   |
| 0.0221     |                  | 350   | 425   | 427   | 509   | 332   | 385   |
| 0.044      |                  | 322   | 244   | 299   | 297   | 339   | 332   |
| 0.088      |                  | 140   | 161   | 126   | 114   | 104   | 147   |
| 0.176      |                  | 123   | 105   | 110   | 99    | 131   | 129   |
| 0.37       |                  | 122   | 118   | 131   | 107   | 117   | 130   |
| 0.73       |                  |       | 93    | 103   | 98    |       | 111   |
| 1.46       |                  | 173   |       | 144   | 108   | 126   | 96    |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 0.6   | 1     | 1     | 1     | 0.6   | 1     |
| 0.37       |                  | 0.4   | 0.8   | 0.6   | 0.6   | 0.8   | 0.8   |
| 0.73       |                  | 0     | 0.2   | 0.4   | 0.2   | 0     | 0.2   |
| 1.46       |                  | 0.6   | 0     | 0.2   | 0.4   | 0.6   | 0.2   |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1.63  | 1.91  | 1.78  | 2.22  | 1.96  | 1.9   |
| 0.00138    |                  | 1.96  | 1.78  | 1.68  | 1.95  | 1.79  | 2.05  |
| 0.0027     |                  | 1.96  | 1.91  | 2.01  | 1.57  | 1.89  | 2.14  |
| 0.0055     |                  | 2.05  | 1.83  | 1.78  | 1.89  | 1.81  | 1.89  |
| 0.011      |                  | 1.72  | 1.44  | 1.89  | 1.96  | 1.65  | 1.6   |
| 0.0221     |                  | 1.44  | 1.31  | 1.5   | 1.41  | 1.29  | 0.989 |
| 0.044      |                  | 1.47  | 1.29  | 0.869 | 1.25  | 1.29  | 0.866 |
| 0.088      |                  | 0.372 | 0.327 | 0.324 | 0.275 | 0.188 | 0.339 |
| 0.176      |                  | 0.193 | 0.197 | 0.187 | 0.135 | 0.272 | 0.176 |
| 0.37       |                  | 0.201 | 0.193 | 0.223 | 0.203 | 0.163 | 0.179 |
| 0.73       |                  |       | 0.133 | 0.209 | 0.219 |       | 0.222 |
| 1.46       |                  | 0.233 |       | 0.211 | 0.151 | 0.131 | 0.142 |

**CETIS Summary Report****Report Date:**

08 Jun-16 10:07 (p 1 of 3)

**Test Code:**

49903202 oat | 15-0018-4840

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 10-2877-0216        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:48  | <b>Species:</b> Avena sativa                           | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> L.A. Hearne Company                     | <b>Age:</b>                         |
| <b>Sample ID:</b> 03-7994-5758       | <b>Code:</b> 49903202 oat                              | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:48 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 19-1594-5220       | Height          | 0.35        | 0.71        | 0.4985      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 02-9590-1432       | Height          | 0.176       | 0.35        | 0.2482      | 9.5%        |           | Dunnett Multiple Comparison Test   |
| 10-6366-3322       | Survival        | 0.176       | 0.35        | 0.2482      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 14-1654-4729       | Survival        | 0.71        | 1.42        | 1.004       | 5.94%       |           | Mann-Whitney U Two-Sample Test     |
| 02-7914-1369       | Weight          | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 01-3140-9200       | Weight          | 0.176       | 0.35        | 0.2482      | 15.3%       |           | Dunnett Multiple Comparison Test   |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 03-5988-8851       | Height          | IC5          | 0.142           | 0.0835         | 0.19           |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.215           | 0.155          | 0.272          |           |                         |
|                    |                 | IC25         | 0.428           | 0.36           | 0.501          |           |                         |
|                    |                 | IC50         | 0.922           | 0.829          | 1.03           |           |                         |
| 19-6629-8231       | Survival        | EC5          | 0.437           | 0.273          | 0.559          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.528           | 0.363          | 0.651          |           |                         |
|                    |                 | EC25         | 0.725           | 0.57           | 0.861          |           |                         |
|                    |                 | EC50         | 1.03            | 0.869          | 1.27           |           |                         |
| 16-3359-0013       | Survival        | EC50         | 1.06            | 0.96           | 1.16           |           | Trimmed Spearman-Kärber |
| 06-2628-7061       | Weight          | IC5          | 0.0473          | N/A            | 0.0832         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0818          | 0.0379         | 0.129          |           |                         |
|                    |                 | IC25         | 0.205           | 0.14           | 0.283          |           |                         |
|                    |                 | IC50         | 0.566           | 0.459          | 0.699          |           |                         |

**CETIS Summary Report**

Report Date:

08 Jun-16 10:07 (p 2 of 3)

Test Code:

49903202 oat | 15-0018-4840

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 560  | 518     | 602     | 513 | 625 | 16.2    | 39.6    | 7.08% | 0.0%    |
| 0.00138    |                  | 6     | 568  | 533     | 603     | 534 | 615 | 13.6    | 33.2    | 5.85% | -1.43%  |
| 0.0027     |                  | 6     | 578  | 551     | 604     | 546 | 621 | 10.4    | 25.5    | 4.41% | -3.15%  |
| 0.0055     |                  | 6     | 579  | 547     | 612     | 542 | 616 | 12.6    | 31      | 5.34% | -3.42%  |
| 0.011      |                  | 6     | 551  | 514     | 588     | 486 | 579 | 14.4    | 35.2    | 6.39% | 1.64%   |
| 0.0221     |                  | 6     | 557  | 532     | 582     | 523 | 582 | 9.6     | 23.5    | 4.22% | 0.54%   |
| 0.044      |                  | 6     | 571  | 545     | 596     | 532 | 594 | 9.92    | 24.3    | 4.26% | -1.9%   |
| 0.088      |                  | 6     | 568  | 541     | 595     | 536 | 604 | 10.4    | 25.5    | 4.49% | -1.46%  |
| 0.176      |                  | 6     | 584  | 545     | 622     | 551 | 653 | 14.9    | 36.4    | 6.24% | -4.23%  |
| 0.35       |                  | 6     | 503  | 443     | 562     | 440 | 570 | 23.1    | 56.5    | 11.2% | 10.2%   |
| 0.71       |                  | 6     | 257  | 213     | 301     | 216 | 326 | 17.2    | 42.1    | 16.4% | 54.1%   |
| 1.42       |                  | 5     | 237  | 207     | 268     | 195 | 256 | 11      | 24.5    | 10.3% | 57.6%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.00138    |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0027     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0055     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.011      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0221     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.044      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.088      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.176      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.35       |                  | 6     | 0.933 | 0.825   | 1       | 0.8 | 1   | 0.0422  | 0.103   | 11.1% | 6.67%   |
| 0.71       |                  | 6     | 0.9   | 0.785   | 1       | 0.8 | 1   | 0.0447  | 0.11    | 12.2% | 10.0%   |
| 1.42       |                  | 6     | 0.2   | 0.0673  | 0.333   | 0   | 0.4 | 0.0516  | 0.126   | 63.2% | 80.0%   |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 0.805 | 0.717   | 0.893   | 0.709 | 0.913 | 0.0343  | 0.084   | 10.4% | 0.0%    |
| 0.00138    |                  | 6     | 0.862 | 0.794   | 0.929   | 0.796 | 0.952 | 0.0263  | 0.0644  | 7.47% | -7.07%  |
| 0.0027     |                  | 6     | 0.881 | 0.798   | 0.963   | 0.827 | 1.03  | 0.032   | 0.0784  | 8.91% | -9.4%   |
| 0.0055     |                  | 6     | 0.816 | 0.771   | 0.862   | 0.779 | 0.894 | 0.0177  | 0.0433  | 5.3%  | -1.4%   |
| 0.011      |                  | 6     | 0.828 | 0.789   | 0.868   | 0.78  | 0.871 | 0.0153  | 0.0375  | 4.52% | -2.89%  |
| 0.0221     |                  | 6     | 0.861 | 0.792   | 0.93    | 0.793 | 0.97  | 0.0268  | 0.0657  | 7.63% | -6.98%  |
| 0.044      |                  | 6     | 0.827 | 0.767   | 0.887   | 0.776 | 0.915 | 0.0234  | 0.0573  | 6.93% | -2.73%  |
| 0.088      |                  | 6     | 0.792 | 0.729   | 0.855   | 0.678 | 0.845 | 0.0245  | 0.06    | 7.58% | 1.66%   |
| 0.176      |                  | 6     | 0.779 | 0.696   | 0.862   | 0.693 | 0.877 | 0.0322  | 0.0788  | 10.1% | 3.21%   |
| 0.35       |                  | 6     | 0.557 | 0.384   | 0.729   | 0.423 | 0.835 | 0.0671  | 0.164   | 29.5% | 30.9%   |
| 0.71       |                  | 6     | 0.173 | 0.143   | 0.202   | 0.13  | 0.209 | 0.0114  | 0.0279  | 16.2% | 78.6%   |
| 1.42       |                  | 5     | 0.351 | 0.211   | 0.491   | 0.201 | 0.472 | 0.0505  | 0.113   | 32.2% | 56.4%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 10:07 (p 3 of 3)

Test Code:

49903202 oat | 15-0018-4840

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 527   | 513   | 559   | 578   | 558   | 625   |
| 0.00138    |                  | 615   | 583   | 534   | 543   | 541   | 592   |
| 0.0027     |                  | 580   | 559   | 580   | 546   | 580   | 621   |
| 0.0055     |                  | 574   | 605   | 542   | 616   | 593   | 545   |
| 0.011      |                  | 571   | 535   | 486   | 564   | 570   | 579   |
| 0.0221     |                  | 523   | 535   | 558   | 577   | 582   | 567   |
| 0.044      |                  | 593   | 555   | 567   | 532   | 583   | 594   |
| 0.088      |                  | 536   | 559   | 586   | 577   | 547   | 604   |
| 0.176      |                  | 564   | 565   | 581   | 588   | 551   | 653   |
| 0.35       |                  | 570   | 569   | 484   | 450   | 440   | 503   |
| 0.71       |                  | 290   | 326   | 230   | 238   | 242   | 216   |
| 1.42       |                  | 256   |       | 195   | 244   | 240   | 252   |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.35       |                  | 0.8   | 1     | 0.8   | 1     | 1     | 1     |
| 0.71       |                  | 1     | 1     | 0.8   | 1     | 0.8   | 0.8   |
| 1.42       |                  | 0.2   | 0     | 0.2   | 0.4   | 0.2   | 0.2   |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 0.88  | 0.827 | 0.716 | 0.784 | 0.709 | 0.913 |
| 0.00138    |                  | 0.952 | 0.819 | 0.842 | 0.83  | 0.796 | 0.932 |
| 0.0027     |                  | 0.848 | 0.832 | 0.827 | 0.894 | 0.85  | 1.03  |
| 0.0055     |                  | 0.828 | 0.894 | 0.779 | 0.794 | 0.822 | 0.78  |
| 0.011      |                  | 0.871 | 0.87  | 0.801 | 0.811 | 0.837 | 0.78  |
| 0.0221     |                  | 0.793 | 0.886 | 0.97  | 0.81  | 0.883 | 0.824 |
| 0.044      |                  | 0.915 | 0.776 | 0.837 | 0.776 | 0.87  | 0.787 |
| 0.088      |                  | 0.845 | 0.798 | 0.829 | 0.782 | 0.678 | 0.818 |
| 0.176      |                  | 0.719 | 0.877 | 0.77  | 0.693 | 0.742 | 0.874 |
| 0.35       |                  | 0.835 | 0.661 | 0.548 | 0.423 | 0.425 | 0.448 |
| 0.71       |                  | 0.209 | 0.188 | 0.163 | 0.13  | 0.188 | 0.158 |
| 1.42       |                  | 0.472 |       | 0.266 | 0.201 | 0.398 | 0.416 |

**CETIS Summary Report****Report Date:**

08 Jun-16 14:42 (p 1 of 3)

**Test Code:**

49903202 oilsee | 14-3340-5850

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 01-8038-1000        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:55  | <b>Species:</b> Brassica napus                         | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Johnny's Selected Seeds, ME             | <b>Age:</b>                         |
| <b>Sample ID:</b> 06-7329-2984       | <b>Code:</b> 49903202 oilsee                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:55 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 17-9198-5028       | Height          | 0.044       | 0.088       | 0.06223     | 11.9%       |           | Dunnnett Multiple Comparison Test  |
| 11-9157-6471       | Height          | 0.0221      | 0.044       | 0.03118     | 8.54%       |           | Williams Multiple Comparison Test  |
| 15-2054-0225       | Survival        | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 13-4352-6110       | Survival        | 0.176       | 0.37        | 0.2552      | 9.99%       |           | Mann-Whitney U Two-Sample Test     |
| 18-7768-3806       | Weight          | 0.044       | 0.088       | 0.06223     | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 06-0893-8510       | Weight          | 0.0221      | 0.044       | 0.03118     | 10.5%       |           | Mann-Whitney U Two-Sample Test     |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 09-6471-6467       | Height          | IC5          | 0.00493         | 0.00125        | 0.0095         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0112          | 0.00633        | 0.0172         |           |                         |
|                    |                 | IC25         | 0.0442          | 0.0322         | 0.0592         |           |                         |
|                    |                 | IC50         | 0.203           | 0.169          | 0.244          |           |                         |
| 14-7235-4167       | Survival        | EC5          | 0.142           | 0.0914         | 0.188          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.182           | 0.126          | 0.233          |           |                         |
|                    |                 | EC25         | 0.276           | 0.213          | 0.337          |           |                         |
|                    |                 | EC50         | 0.439           | 0.363          | 0.533          |           |                         |
| 06-0527-2057       | Survival        | EC50         | 0.448           | 0.372          | 0.539          |           | Spearman-Kärber         |
| 01-9282-7039       | Weight          | IC5          | 0.0126          | 0.00494        | 0.0185         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0196          | 0.0133         | 0.0257         |           |                         |
|                    |                 | IC25         | 0.0408          | 0.0325         | 0.0498         |           |                         |
|                    |                 | IC50         | 0.0921          | 0.0799         | 0.106          |           |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 14:42 (p 2 of 3)

**Test Code:**

49903202 oilsee | 14-3340-5850

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 351         | 329            | 372            | 311        | 369        | 8.38           | 20.5           | 5.85%      | 0.0%           |
| 0.00138           |                     | 6            | 339         | 279            | 398            | 252        | 408        | 23.2           | 56.8           | 16.8%      | 3.42%          |
| 0.0027            |                     | 6            | 352         | 324            | 380            | 323        | 393        | 11             | 27.1           | 7.69%      | -0.43%         |
| 0.0055            |                     | 6            | 350         | 323            | 378            | 310        | 391        | 10.7           | 26.1           | 7.46%      | 0.1%           |
| 0.011             |                     | 6            | 357         | 333            | 380            | 328        | 384        | 9.16           | 22.4           | 6.29%      | -1.76%         |
| 0.0221            |                     | 6            | 335         | 310            | 359            | 308        | 365        | 9.59           | 23.5           | 7.02%      | 4.52%          |
| 0.044             |                     | 6            | 309         | 288            | 330            | 277        | 330        | 8.22           | 20.1           | 6.51%      | 11.7%          |
| 0.088             |                     | 6            | 193         | 152            | 234            | 142        | 260        | 15.9           | 39             | 20.2%      | 44.9%          |
| 0.176             |                     | 6            | 160         | 140            | 179            | 137        | 182        | 7.77           | 19             | 11.9%      | 54.5%          |
| 0.37              |                     | 6            | 136         | 115            | 157            | 104        | 163        | 8.24           | 20.2           | 14.8%      | 61.2%          |
| 0.73              |                     | 6            | 128         | 111            | 145            | 113        | 157        | 6.72           | 16.4           | 12.8%      | 63.4%          |

**Survival Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.00138           |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0027            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0055            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.011             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0221            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.044             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.088             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.176             |                     | 6            | 0.8         | 0.57           | 1              | 0.6        | 1          | 0.0894         | 0.219          | 27.4%      | 20.0%          |
| 0.37              |                     | 6            | 0.767       | 0.521          | 1              | 0.4        | 1          | 0.0955         | 0.234          | 30.5%      | 23.3%          |
| 0.73              |                     | 6            | 0.233       | 0.148          | 0.319          | 0.2        | 0.4        | 0.0333         | 0.0816         | 35.0%      | 76.7%          |
| 1.46              |                     | 6            | 0           | 0              | 0              | 0          | 0          | 0              | 0              | 100.0%     |                |

**Weight Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 2.7         | 2.35           | 3.06           | 2.36       | 3.15       | 0.137          | 0.336          | 12.4%      | 0.0%           |
| 0.00138           |                     | 6            | 2.37        | 2.08           | 2.65           | 1.94       | 2.63       | 0.11           | 0.27           | 11.4%      | 12.5%          |
| 0.0027            |                     | 6            | 2.67        | 2.39           | 2.96           | 2.37       | 3.1        | 0.111          | 0.272          | 10.2%      | 1.21%          |
| 0.0055            |                     | 6            | 2.54        | 2.22           | 2.87           | 2.13       | 2.92       | 0.127          | 0.31           | 12.2%      | 5.95%          |
| 0.011             |                     | 6            | 2.6         | 2.36           | 2.84           | 2.35       | 2.95       | 0.0926         | 0.227          | 8.74%      | 3.94%          |
| 0.0221            |                     | 6            | 2.49        | 2.18           | 2.8            | 2.23       | 3.03       | 0.12           | 0.293          | 11.8%      | 7.98%          |
| 0.044             |                     | 6            | 2.22        | 1.76           | 2.67           | 1.75       | 2.76       | 0.177          | 0.434          | 19.6%      | 17.9%          |
| 0.088             |                     | 6            | 1.21        | 0.972          | 1.44           | 0.949      | 1.5        | 0.0917         | 0.225          | 18.6%      | 55.3%          |
| 0.176             |                     | 6            | 0.659       | 0.363          | 0.955          | 0.301      | 1.01       | 0.115          | 0.282          | 42.8%      | 75.6%          |
| 0.37              |                     | 6            | 0.288       | 0.236          | 0.34           | 0.208      | 0.361      | 0.0202         | 0.0495         | 17.2%      | 89.3%          |
| 0.73              |                     | 6            | 0.192       | 0.153          | 0.231          | 0.149      | 0.237      | 0.0152         | 0.0373         | 19.5%      | 92.9%          |

**CETIS Summary Report**

Report Date:

08 Jun-16 14:42 (p 3 of 3)

Test Code:

49903202 oilsee | 14-3340-5850

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 311   | 364   | 369   | 352   | 354   | 353   |
| 0.00138    |                  | 352   | 408   | 347   | 378   | 294   | 252   |
| 0.0027     |                  | 359   | 393   | 371   | 323   | 335   | 331   |
| 0.0055     |                  | 391   | 358   | 349   | 342   | 351   | 310   |
| 0.011      |                  | 343   | 380   | 362   | 328   | 384   | 343   |
| 0.0221     |                  | 338   | 359   | 308   | 315   | 365   | 323   |
| 0.044      |                  | 313   | 330   | 314   | 327   | 277   | 295   |
| 0.088      |                  | 206   | 260   | 187   | 176   | 188   | 142   |
| 0.176      |                  | 137   | 171   | 137   | 172   | 158   | 182   |
| 0.37       |                  | 163   | 135   | 125   | 144   | 146   | 104   |
| 0.73       |                  | 113   | 135   | 126   | 157   | 125   | 113   |
| 1.46       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 0.6   | 1     | 0.6   | 1     | 0.6   | 1     |
| 0.37       |                  | 0.4   | 0.8   | 1     | 0.8   | 1     | 0.6   |
| 0.73       |                  | 0.4   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   |
| 1.46       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 2.39  | 2.48  | 2.36  | 2.91  | 2.94  | 3.15  |
| 0.00138    |                  | 2.55  | 1.94  | 2.51  | 2.43  | 2.63  | 2.13  |
| 0.0027     |                  | 2.37  | 2.52  | 2.46  | 3.1   | 2.77  | 2.8   |
| 0.0055     |                  | 2.55  | 2.29  | 2.13  | 2.92  | 2.5   | 2.87  |
| 0.011      |                  | 2.39  | 2.35  | 2.51  | 2.7   | 2.95  | 2.69  |
| 0.0221     |                  | 2.23  | 2.37  | 2.42  | 2.29  | 3.03  | 2.6   |
| 0.044      |                  | 1.75  | 1.92  | 1.85  | 2.76  | 2.65  | 2.38  |
| 0.088      |                  | 1.5   | 1.11  | 1.03  | 0.949 | 1.22  | 1.45  |
| 0.176      |                  | 0.301 | 0.987 | 0.576 | 0.493 | 0.59  | 1.01  |
| 0.37       |                  | 0.361 | 0.303 | 0.294 | 0.291 | 0.272 | 0.208 |
| 0.73       |                  | 0.162 | 0.237 | 0.225 | 0.211 | 0.149 | 0.165 |
| 1.46       |                  |       |       |       |       |       |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 14:49 (p 1 of 3)

**Test Code:**

49903202 onion | 20-6192-7037

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 11-6427-8985        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:56  | <b>Species:</b> Allium cepa                            | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Park Seed Co.                           | <b>Age:</b>                         |
| <b>Sample ID:</b> 21-3330-0494       | <b>Code:</b> 49903202 onion                            | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:56 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 01-6123-6532       | Height          | 0.73        | 1.46        | 1.032       | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 16-9479-7327       | Height          | 0.37        | 0.73        | 0.5197      | 13.1%       |           | Dunnett Multiple Comparison Test   |
| 19-6265-9162       | Survival        | 1.46        | >1.46       | NA          | NA          |           | Mann-Whitney U Two-Sample Test     |
| 01-5812-4072       | Weight          | 0.37        | 0.73        | 0.5197      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 13-3467-5057       | Weight          | 0.176       | 0.37        | 0.2552      | 27.8%       |           | Dunnett Multiple Comparison Test   |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>        |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|----------------------|
| 10-4714-2768       | Height          | IC5          | 0.205           | 0.0769         | 0.32           |           | Nonlinear Regression |
|                    |                 | IC10         | 0.352           | 0.213          | 0.499          |           |                      |
|                    |                 | IC25         | 0.872           | 0.713          | 1.05           |           |                      |
|                    |                 | IC50         | 2.39            | 1.66           | 3.43           |           |                      |
| 01-7848-7135       | Weight          | IC5          | 0.112           | N/A            | 0.173          |           | Nonlinear Regression |
|                    |                 | IC10         | 0.163           | 0.0799         | 0.234          |           |                      |
|                    |                 | IC25         | 0.304           | 0.217          | 0.4            |           |                      |
|                    |                 | IC50         | 0.607           | 0.509          | 0.725          |           |                      |

**CETIS Summary Report**

Report Date:

08 Jun-16 14:49 (p 2 of 3)

Test Code:

49903202 onion | 20-6192-7037

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 376  | 335     | 417     | 330 | 443 | 16      | 39.1    | 10.4% | 0.0%    |
| 0.00138    |                  | 6     | 384  | 362     | 407     | 349 | 410 | 8.81    | 21.6    | 5.62% | -2.13%  |
| 0.0027     |                  | 6     | 356  | 325     | 387     | 320 | 406 | 11.9    | 29.2    | 8.21% | 5.36%   |
| 0.0055     |                  | 6     | 393  | 372     | 414     | 360 | 415 | 8.23    | 20.2    | 5.13% | -4.43%  |
| 0.011      |                  | 6     | 417  | 366     | 468     | 342 | 466 | 19.8    | 48.6    | 11.6% | -10.9%  |
| 0.0221     |                  | 6     | 411  | 372     | 449     | 348 | 448 | 15      | 36.6    | 8.92% | -9.12%  |
| 0.044      |                  | 6     | 418  | 378     | 457     | 391 | 484 | 15.3    | 37.5    | 8.98% | -10.9%  |
| 0.088      |                  | 6     | 404  | 381     | 426     | 380 | 427 | 8.72    | 21.3    | 5.29% | -7.31%  |
| 0.176      |                  | 6     | 384  | 358     | 410     | 349 | 413 | 10.2    | 24.9    | 6.47% | -2.08%  |
| 0.37       |                  | 6     | 354  | 317     | 392     | 325 | 420 | 14.6    | 35.7    | 10.1% | 5.89%   |
| 0.73       |                  | 6     | 297  | 265     | 330     | 276 | 357 | 12.7    | 31.1    | 10.5% | 21.0%   |
| 1.46       |                  | 6     | 255  | 210     | 300     | 190 | 310 | 17.4    | 42.6    | 16.7% | 32.2%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%  | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|------|---------|
| 0          | Negative Control | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.00138    |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0027     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0055     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.011      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.0221     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.044      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.088      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.176      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.37       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 0.73       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |
| 1.46       |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0% | 0.0%    |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min    | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|--------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 0.427 | 0.332   | 0.523   | 0.334  | 0.571 | 0.0372  | 0.0911  | 21.3% | 0.0%    |
| 0.00138    |                  | 6     | 0.42  | 0.372   | 0.468   | 0.343  | 0.482 | 0.0187  | 0.0457  | 10.9% | 1.64%   |
| 0.0027     |                  | 6     | 0.406 | 0.299   | 0.512   | 0.254  | 0.555 | 0.0413  | 0.101   | 25.0% | 5.07%   |
| 0.0055     |                  | 6     | 0.477 | 0.38    | 0.575   | 0.303  | 0.545 | 0.0379  | 0.0929  | 19.5% | -11.7%  |
| 0.011      |                  | 6     | 0.523 | 0.433   | 0.612   | 0.404  | 0.624 | 0.0349  | 0.0854  | 16.3% | -22.4%  |
| 0.0221     |                  | 6     | 0.478 | 0.373   | 0.583   | 0.354  | 0.599 | 0.0408  | 0.0998  | 20.9% | -11.8%  |
| 0.044      |                  | 6     | 0.478 | 0.36    | 0.595   | 0.329  | 0.653 | 0.0456  | 0.112   | 23.4% | -11.8%  |
| 0.088      |                  | 6     | 0.451 | 0.39    | 0.513   | 0.38   | 0.512 | 0.0238  | 0.0582  | 12.9% | -5.66%  |
| 0.176      |                  | 6     | 0.463 | 0.378   | 0.547   | 0.38   | 0.555 | 0.033   | 0.0808  | 17.5% | -8.27%  |
| 0.37       |                  | 6     | 0.29  | 0.216   | 0.365   | 0.229  | 0.425 | 0.029   | 0.0711  | 24.5% | 32.1%   |
| 0.73       |                  | 6     | 0.188 | 0.123   | 0.253   | 0.101  | 0.27  | 0.0254  | 0.0621  | 33.1% | 56.0%   |
| 1.46       |                  | 6     | 0.099 | 0.0651  | 0.133   | 0.0529 | 0.136 | 0.0132  | 0.0323  | 32.6% | 76.8%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 14:49 (p 3 of 3)

Test Code:

49903202 onion | 20-6192-7037

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 386   | 443   | 383   | 330   | 369   | 347   |
| 0.00138    |                  | 400   | 386   | 389   | 410   | 372   | 349   |
| 0.0027     |                  | 406   | 320   | 366   | 349   | 338   | 358   |
| 0.0055     |                  | 393   | 404   | 380   | 415   | 406   | 360   |
| 0.011      |                  | 411   | 381   | 453   | 466   | 451   | 342   |
| 0.0221     |                  | 400   | 399   | 435   | 448   | 434   | 348   |
| 0.044      |                  | 395   | 484   | 399   | 441   | 395   | 391   |
| 0.088      |                  | 427   | 384   | 421   | 390   | 380   | 421   |
| 0.176      |                  | 360   | 413   | 395   | 349   | 402   | 386   |
| 0.37       |                  | 369   | 342   | 325   | 420   | 339   | 330   |
| 0.73       |                  | 303   | 276   | 279   | 357   | 291   | 277   |
| 1.46       |                  | 310   | 255   | 229   | 190   | 258   | 289   |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.37       |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.73       |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 1.46       |                  | 1     | 1     | 1     | 1     | 1     | 1     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2  | Rep 3  | Rep 4  | Rep 5 | Rep 6 |
|------------|------------------|-------|--------|--------|--------|-------|-------|
| 0          | Negative Control | 0.366 | 0.571  | 0.504  | 0.334  | 0.381 | 0.408 |
| 0.00138    |                  | 0.343 | 0.409  | 0.434  | 0.482  | 0.437 | 0.417 |
| 0.0027     |                  | 0.421 | 0.254  | 0.426  | 0.339  | 0.438 | 0.555 |
| 0.0055     |                  | 0.303 | 0.51   | 0.442  | 0.534  | 0.545 | 0.53  |
| 0.011      |                  | 0.496 | 0.459  | 0.548  | 0.605  | 0.624 | 0.404 |
| 0.0221     |                  | 0.372 | 0.354  | 0.515  | 0.562  | 0.599 | 0.466 |
| 0.044      |                  | 0.329 | 0.527  | 0.424  | 0.653  | 0.423 | 0.509 |
| 0.088      |                  | 0.487 | 0.382  | 0.497  | 0.38   | 0.451 | 0.512 |
| 0.176      |                  | 0.38  | 0.403  | 0.496  | 0.392  | 0.55  | 0.555 |
| 0.37       |                  | 0.255 | 0.229  | 0.255  | 0.425  | 0.267 | 0.31  |
| 0.73       |                  | 0.234 | 0.101  | 0.211  | 0.27   | 0.144 | 0.168 |
| 1.46       |                  | 0.126 | 0.0954 | 0.0708 | 0.0529 | 0.113 | 0.136 |

**CETIS Summary Report****Report Date:**

08 Jun-16 14:59 (p 1 of 3)

**Test Code:**

49903202 radish | 21-2235-7723

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 18-8279-2076        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:56  | <b>Species:</b> Raphanus sativus                       | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Sustainable Seed Co., CA                | <b>Age:</b>                         |
| <b>Sample ID:</b> 03-1078-9535       | <b>Code:</b> 49903202 radish                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:56 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 14-8230-3657       | Height          | 0.011       | 0.0221      | 0.01559     | 22.4%       |           | Dunnnett Multiple Comparison Test  |
| 20-9718-9752       | Height          | 0.011       | 0.0221      | 0.01559     | 15.6%       |           | Williams Multiple Comparison Test  |
| 07-5728-0069       | Survival        | 0.044       | 0.088       | 0.06223     | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 15-6992-5085       | Survival        | 0.044       | 0.088       | 0.06223     | 11.8%       |           | Mann-Whitney U Two-Sample Test     |
| 08-4659-4866       | Weight          | 0.0221      | 0.044       | 0.03118     | 33.5%       |           | Dunnett Multiple Comparison Test   |
| 15-5121-3758       | Weight          | 0.011       | 0.0221      | 0.01559     | 23.3%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>lbs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 12-3179-7859       | Height          | IC5          | 0.00263         | 9.03E-05       | 0.00627        |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.00638         | 0.00276        | 0.0113         |           |                         |
|                    |                 | IC25         | 0.028           | 0.0186         | 0.0403         |           |                         |
|                    |                 | IC50         | 0.145           | 0.105          | 0.2            |           |                         |
| 21-0207-5883       | Survival        | EC5          | 0.052           | 0.035          | 0.067          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.0644          | 0.0463         | 0.0803         |           |                         |
|                    |                 | EC25         | 0.0923          | 0.0728         | 0.11           |           |                         |
|                    |                 | EC50         | 0.137           | 0.115          | 0.164          |           |                         |
| 04-8353-6386       | Survival        | EC50         | 0.138           | 0.115          | 0.166          |           | Spearman-Kärber         |
| 06-5020-3453       | Weight          | IC5          | 0.00686         | N/A            | 0.0105         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0102          | 0.00622        | 0.0138         |           |                         |
|                    |                 | IC25         | 0.0197          | 0.0151         | 0.0247         |           |                         |
|                    |                 | IC50         | 0.041           | 0.0349         | 0.0481         |           |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 14:59 (p 2 of 3)

**Test Code:**

49903202 radish | 21-2235-7723

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 246  | 233     | 258     | 228 | 264 | 4.9     | 12      | 4.89% | 0.0%    |
| 0.00138    |                  | 6     | 232  | 212     | 252     | 209 | 264 | 7.87    | 19.3    | 8.32% | 5.57%   |
| 0.0027     |                  | 6     | 265  | 240     | 289     | 224 | 286 | 9.4     | 23      | 8.71% | -7.74%  |
| 0.0055     |                  | 6     | 270  | 258     | 281     | 256 | 289 | 4.49    | 11      | 4.08% | -9.78%  |
| 0.011      |                  | 6     | 253  | 233     | 273     | 226 | 275 | 7.8     | 19.1    | 7.55% | -3.12%  |
| 0.0221     |                  | 6     | 212  | 180     | 243     | 188 | 254 | 12.4    | 30.4    | 14.4% | 13.8%   |
| 0.044      |                  | 6     | 150  | 128     | 171     | 122 | 179 | 8.47    | 20.7    | 13.9% | 39.0%   |
| 0.088      |                  | 6     | 123  | 95      | 150     | 90  | 159 | 10.7    | 26.2    | 21.4% | 50.1%   |
| 0.176      |                  | 6     | 135  | 124     | 146     | 126 | 155 | 4.3     | 10.5    | 7.83% | 45.1%   |
| 0.37       |                  | 1     | 153  |         |         | 153 | 153 | 0       | 0       | 0.0%  | 37.7%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean   | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%    | %Effect |
|------------|------------------|-------|--------|---------|---------|-----|-----|---------|---------|--------|---------|
| 0          | Negative Control | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.00138    |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0027     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0055     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.011      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0221     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.044      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.088      |                  | 6     | 0.667  | 0.351   | 0.983   | 0.2 | 1   | 0.123   | 0.301   | 45.2%  | 33.3%   |
| 0.176      |                  | 6     | 0.433  | 0.188   | 0.679   | 0.2 | 0.8 | 0.0955  | 0.234   | 54.0%  | 56.7%   |
| 0.37       |                  | 6     | 0.0333 | 0       | 0.119   | 0   | 0.2 | 0.0333  | 0.0816  | 245.0% | 96.7%   |
| 0.73       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |
| 1.46       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean   | 95% LCL | 95% UCL | Min    | Max    | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|--------|---------|---------|--------|--------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1.28   | 1.15    | 1.41    | 1.13   | 1.43   | 0.0508  | 0.124   | 9.68% | 0.0%    |
| 0.00138    |                  | 6     | 1.35   | 1.12    | 1.57    | 1.03   | 1.6    | 0.0882  | 0.216   | 16.1% | -4.82%  |
| 0.0027     |                  | 6     | 1.42   | 1.25    | 1.59    | 1.26   | 1.67   | 0.067   | 0.164   | 11.6% | -10.6%  |
| 0.0055     |                  | 6     | 1.44   | 1.23    | 1.64    | 1.18   | 1.64   | 0.0791  | 0.194   | 13.5% | -11.9%  |
| 0.011      |                  | 6     | 1.38   | 1.27    | 1.48    | 1.31   | 1.57   | 0.0396  | 0.097   | 7.06% | -7.1%   |
| 0.0221     |                  | 6     | 1.06   | 0.881   | 1.25    | 0.855  | 1.3    | 0.071   | 0.174   | 16.4% | 17.2%   |
| 0.044      |                  | 6     | 0.618  | 0.429   | 0.807   | 0.39   | 0.85   | 0.0735  | 0.18    | 29.2% | 51.9%   |
| 0.088      |                  | 6     | 0.261  | 0.125   | 0.397   | 0.0113 | 0.348  | 0.053   | 0.13    | 49.7% | 79.7%   |
| 0.176      |                  | 6     | 0.158  | 0.0547  | 0.262   | 0.0395 | 0.273  | 0.0403  | 0.0986  | 62.3% | 87.7%   |
| 0.37       |                  | 1     | 0.0991 |         |         | 0.0991 | 0.0991 | 0       | 0       | 0.0%  | 92.3%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 14:59 (p 3 of 3)

Test Code:

49903202 radish | 21-2235-7723

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 238   | 264   | 248   | 248   | 228   | 247   |
| 0.00138    |                  | 234   | 264   | 222   | 241   | 221   | 209   |
| 0.0027     |                  | 286   | 254   | 282   | 265   | 276   | 224   |
| 0.0055     |                  | 263   | 269   | 289   | 256   | 270   | 270   |
| 0.011      |                  | 275   | 275   | 245   | 226   | 253   | 245   |
| 0.0221     |                  | 247   | 190   | 254   | 197   | 188   | 193   |
| 0.044      |                  | 132   | 155   | 122   | 147   | 179   | 163   |
| 0.088      |                  | 135   | 104   | 107   | 159   | 90    | 140   |
| 0.176      |                  | 130   | 135   | 128   | 155   | 126   | 134   |
| 0.37       |                  |       |       |       |       |       | 153   |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 0.6   | 1     | 0.6   | 0.6   | 0.2   | 1     |
| 0.176      |                  | 0.2   | 0.4   | 0.8   | 0.4   | 0.2   | 0.6   |
| 0.37       |                  | 0     | 0     | 0     | 0     | 0.2   | 0     |
| 0.73       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.46       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1  | Rep 2  | Rep 3 | Rep 4 | Rep 5  | Rep 6  |
|------------|------------------|--------|--------|-------|-------|--------|--------|
| 0          | Negative Control | 1.37   | 1.43   | 1.37  | 1.15  | 1.25   | 1.13   |
| 0.00138    |                  | 1.03   | 1.34   | 1.24  | 1.6   | 1.58   | 1.29   |
| 0.0027     |                  | 1.35   | 1.29   | 1.38  | 1.57  | 1.67   | 1.26   |
| 0.0055     |                  | 1.18   | 1.25   | 1.64  | 1.53  | 1.4    | 1.63   |
| 0.011      |                  | 1.35   | 1.31   | 1.37  | 1.34  | 1.32   | 1.57   |
| 0.0221     |                  | 1.14   | 0.906  | 1.3   | 0.99  | 0.855  | 1.18   |
| 0.044      |                  | 0.39   | 0.509  | 0.575 | 0.563 | 0.85   | 0.818  |
| 0.088      |                  | 0.343  | 0.297  | 0.233 | 0.348 | 0.0113 | 0.335  |
| 0.176      |                  | 0.0395 | 0.0805 | 0.194 | 0.101 | 0.262  | 0.273  |
| 0.37       |                  |        |        |       |       |        | 0.0991 |
| 0.73       |                  |        |        |       |       |        |        |
| 1.46       |                  |        |        |       |       |        |        |

**CETIS Summary Report****Report Date:**

08 Jun-16 15:04 (p 1 of 3)

**Test Code:**

49903202 sorghu | 01-0280-7958

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 17-1814-8486        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:50  | <b>Species:</b> Sorghum bicolor                        | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Syngenta Seed Care                      | <b>Age:</b>                         |
| <b>Sample ID:</b> 04-3348-8125       | <b>Code:</b> 49903202 sorghu                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:50 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 10-6309-5942       | Height          | 0.176       | 0.35        | 0.2482      | 7.56%       |           | Dunnnett Multiple Comparison Test  |
| 11-6203-3972       | Height          | 0.176       | 0.35        | 0.2482      | 5.49%       |           | Williams Multiple Comparison Test  |
| 05-2114-1356       | Survival        | 0.176       | 0.35        | 0.2482      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 04-0477-4168       | Survival        | 0.35        | 0.71        | 0.4985      | 5.35%       |           | Mann-Whitney U Two-Sample Test     |
| 05-9203-9745       | Weight          | 0.176       | 0.35        | 0.2482      | 15.8%       |           | Dunnett Multiple Comparison Test   |
| 15-1533-0439       | Weight          | 0.176       | 0.35        | 0.2482      | 11.5%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>lbs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>        |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|----------------------|
| 17-7090-0321       | Height          | IC5          | 0.287           | 0.282          | 0.291          |           | Nonlinear Regression |
|                    |                 | IC10         | 0.297           | 0.294          | 0.3            |           |                      |
|                    |                 | IC25         | 0.314           | 0.313          | 0.315          |           |                      |
|                    |                 | IC50         | 0.335           | 0.334          | 0.336          |           |                      |
| 16-9001-6211       | Survival        | EC50         | 0.445           | 0.405          | 0.489          |           | Spearman-Kärber      |
| 16-6422-4585       | Weight          | IC5          | 0.241           | N/A            | N/A            |           | Nonlinear Regression |
|                    |                 | IC10         | 0.232           | N/A            | N/A            |           |                      |
|                    |                 | IC25         | 0.217           | N/A            | N/A            |           |                      |
|                    |                 | IC50         | 0.203           | N/A            | N/A            |           |                      |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:04 (p 2 of 3)

Test Code:

49903202 sorghu | 01-0280-7958

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 555  | 522     | 589     | 505 | 589 | 12.9    | 31.6    | 5.69% | 0.0%    |
| 0.00138    |                  | 6     | 539  | 512     | 566     | 512 | 577 | 10.6    | 26      | 4.82% | 2.91%   |
| 0.0027     |                  | 6     | 543  | 505     | 581     | 477 | 587 | 14.9    | 36.5    | 6.72% | 2.25%   |
| 0.0055     |                  | 6     | 533  | 493     | 574     | 462 | 564 | 15.8    | 38.7    | 7.25% | 3.99%   |
| 0.011      |                  | 6     | 551  | 515     | 587     | 527 | 610 | 14      | 34.2    | 6.21% | 0.75%   |
| 0.0221     |                  | 6     | 551  | 520     | 582     | 518 | 582 | 12.1    | 29.7    | 5.4%  | 0.81%   |
| 0.044      |                  | 6     | 572  | 551     | 592     | 543 | 601 | 7.93    | 19.4    | 3.4%  | -2.91%  |
| 0.088      |                  | 6     | 550  | 525     | 574     | 514 | 581 | 9.42    | 23.1    | 4.2%  | 1.02%   |
| 0.176      |                  | 6     | 560  | 529     | 591     | 516 | 589 | 12.1    | 29.6    | 5.29% | -0.87%  |
| 0.35       |                  | 6     | 174  | 159     | 188     | 159 | 200 | 5.64    | 13.8    | 7.95% | 68.7%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 0.967 | 0.881   | 1       | 0.8 | 1   | 0.0333  | 0.0816  | 8.45% | 0.0%    |
| 0.00138    |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.0027     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.0055     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.011      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.0221     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.044      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.088      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.176      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | -3.45%  |
| 0.35       |                  | 6     | 0.833 | 0.675   | 0.991   | 0.6 | 1   | 0.0615  | 0.151   | 18.1% | 13.8%   |
| 0.71       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |
| 1.42       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 0.739 | 0.666   | 0.813   | 0.622 | 0.813 | 0.0286  | 0.0701  | 9.49% | 0.0%    |
| 0.00138    |                  | 6     | 0.696 | 0.601   | 0.791   | 0.56  | 0.829 | 0.037   | 0.0905  | 13.0% | 5.84%   |
| 0.0027     |                  | 6     | 0.767 | 0.678   | 0.856   | 0.629 | 0.836 | 0.0346  | 0.0848  | 11.0% | -3.81%  |
| 0.0055     |                  | 6     | 0.727 | 0.593   | 0.861   | 0.573 | 0.895 | 0.0521  | 0.128   | 17.6% | 1.65%   |
| 0.011      |                  | 6     | 0.679 | 0.625   | 0.734   | 0.634 | 0.775 | 0.0212  | 0.0519  | 7.64% | 8.11%   |
| 0.0221     |                  | 6     | 0.733 | 0.667   | 0.799   | 0.662 | 0.821 | 0.0257  | 0.0629  | 8.58% | 0.85%   |
| 0.044      |                  | 6     | 0.746 | 0.68    | 0.811   | 0.664 | 0.816 | 0.0255  | 0.0624  | 8.36% | -0.85%  |
| 0.088      |                  | 6     | 0.706 | 0.6     | 0.811   | 0.59  | 0.847 | 0.0412  | 0.101   | 14.3% | 4.56%   |
| 0.176      |                  | 6     | 0.666 | 0.567   | 0.766   | 0.587 | 0.817 | 0.0388  | 0.0949  | 14.2% | 9.85%   |
| 0.35       |                  | 6     | 0.166 | 0.154   | 0.179   | 0.152 | 0.18  | 0.00478 | 0.0117  | 7.04% | 77.5%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:04 (p 3 of 3)

Test Code:

49903202 sorghu | 01-0280-7958

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 560   | 589   | 587   | 505   | 538   | 553   |
| 0.00138    |                  | 532   | 563   | 577   | 515   | 536   | 512   |
| 0.0027     |                  | 587   | 554   | 554   | 477   | 550   | 535   |
| 0.0055     |                  | 546   | 555   | 556   | 564   | 462   | 516   |
| 0.011      |                  | 610   | 535   | 576   | 529   | 530   | 527   |
| 0.0221     |                  | 535   | 582   | 576   | 574   | 518   | 520   |
| 0.044      |                  | 574   | 601   | 575   | 559   | 577   | 543   |
| 0.088      |                  | 536   | 560   | 560   | 581   | 547   | 514   |
| 0.176      |                  | 559   | 574   | 535   | 588   | 589   | 516   |
| 0.35       |                  | 171   | 172   | 159   | 172   | 200   | 168   |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 0.8   | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.35       |                  | 1     | 0.8   | 0.8   | 0.6   | 0.8   | 1     |
| 0.71       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.42       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 0.813 | 0.776 | 0.792 | 0.727 | 0.707 | 0.622 |
| 0.00138    |                  | 0.56  | 0.674 | 0.717 | 0.654 | 0.742 | 0.829 |
| 0.0027     |                  | 0.82  | 0.836 | 0.8   | 0.824 | 0.629 | 0.696 |
| 0.0055     |                  | 0.618 | 0.895 | 0.71  | 0.573 | 0.858 | 0.708 |
| 0.011      |                  | 0.775 | 0.651 | 0.691 | 0.682 | 0.643 | 0.634 |
| 0.0221     |                  | 0.675 | 0.787 | 0.745 | 0.707 | 0.662 | 0.821 |
| 0.044      |                  | 0.705 | 0.816 | 0.785 | 0.704 | 0.664 | 0.8   |
| 0.088      |                  | 0.681 | 0.59  | 0.608 | 0.847 | 0.718 | 0.79  |
| 0.176      |                  | 0.587 | 0.619 | 0.592 | 0.817 | 0.75  | 0.633 |
| 0.35       |                  | 0.173 | 0.176 | 0.154 | 0.18  | 0.163 | 0.152 |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 15:12 (p 1 of 3)

**Test Code:**

49903202 soybea | 00-7946-7335

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 16-7956-2274        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 21:03  | <b>Species:</b> Glycine max                            | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Missouri Foundation Seeds, MO           | <b>Age:</b>                         |
| <b>Sample ID:</b> 07-0622-0741       | <b>Code:</b> 49903202 soybea                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 21:03 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 17-3565-0904       | Height          | 0.088       | 0.176       | 0.1245      | 19.2%       |           | Dunnnett Multiple Comparison Test  |
| 21-2807-5367       | Height          | 0.088       | 0.176       | 0.1245      | 13.6%       |           | Williams Multiple Comparison Test  |
| 05-1958-5557       | Survival        | 0.176       | 0.35        | 0.2482      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 14-5081-0420       | Survival        | 0.35        | 0.71        | 0.4985      | 13.1%       |           | Mann-Whitney U Two-Sample Test     |
| 13-4149-8749       | Weight          | 0.044       | 0.088       | 0.06223     | 12.5%       |           | Dunnett Multiple Comparison Test   |
| 17-1536-5244       | Weight          | 0.0221      | 0.044       | 0.03118     | 8.83%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>lbs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 16-9803-2243       | Height          | IC5          | 0.0849          | 0.0398         | 0.116          |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.121           | 0.0815         | 0.156          |           |                         |
|                    |                 | IC25         | 0.218           | 0.178          | 0.261          |           |                         |
|                    |                 | IC50         | 0.421           | 0.373          | 0.475          |           |                         |
| 18-2344-2115       | Survival        | EC5          | 0.389           | 0.274          | 0.466          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.437           | 0.327          | 0.512          |           |                         |
|                    |                 | EC25         | 0.53            | 0.433          | 0.604          |           |                         |
|                    |                 | EC50         | 0.658           | 0.574          | 0.753          |           |                         |
| 15-4544-8659       | Survival        | EC50         | 0.66            | 0.577          | 0.755          |           | Spearman-Kärber         |
| 09-4897-2089       | Weight          | IC5          | 0.0563          | 0.0401         | 0.0692         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0782          | 0.0633         | 0.0921         |           |                         |
|                    |                 | IC25         | 0.136           | 0.119          | 0.153          |           |                         |
|                    |                 | IC50         | 0.251           | 0.232          | 0.271          |           |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 15:12 (p 2 of 3)

**Test Code:**

49903202 soybea | 00-7946-7335

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 366         | 306            | 426            | 280        | 441        | 23.3           | 57.1           | 15.6%      | 0.0%           |
| 0.00138           |                     | 6            | 349         | 310            | 388            | 308        | 407        | 15.3           | 37.4           | 10.7%      | 4.56%          |
| 0.0027            |                     | 6            | 362         | 308            | 415            | 300        | 446        | 20.7           | 50.8           | 14.0%      | 1.09%          |
| 0.0055            |                     | 6            | 367         | 335            | 398            | 324        | 405        | 12.2           | 30             | 8.19%      | -0.18%         |
| 0.011             |                     | 6            | 374         | 321            | 428            | 301        | 453        | 20.7           | 50.8           | 13.6%      | -2.32%         |
| 0.0221            |                     | 6            | 338         | 298            | 378            | 303        | 402        | 15.4           | 37.8           | 11.2%      | 7.61%          |
| 0.044             |                     | 6            | 332         | 291            | 372            | 290        | 378        | 15.9           | 38.8           | 11.7%      | 9.34%          |
| 0.088             |                     | 6            | 350         | 290            | 409            | 240        | 390        | 23             | 56.3           | 16.1%      | 4.46%          |
| 0.176             |                     | 6            | 297         | 252            | 343            | 234        | 345        | 17.7           | 43.3           | 14.6%      | 18.8%          |
| 0.35              |                     | 6            | 199         | 164            | 233            | 148        | 235        | 13.4           | 32.9           | 16.5%      | 45.7%          |
| 0.71              |                     | 4            | 109         | 98.2           | 119            | 102        | 117        | 3.33           | 6.65           | 6.12%      | 70.3%          |

**Survival Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.00138           |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0027            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0055            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.011             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.0221            |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.044             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.088             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.176             |                     | 6            | 1           | 1              | 1              | 1          | 1          | 0              | 0              | 0.0%       | 0.0%           |
| 0.35              |                     | 6            | 0.967       | 0.881          | 1              | 0.8        | 1          | 0.0333         | 0.0816         | 8.45%      | 3.33%          |
| 0.71              |                     | 6            | 0.433       | 0              | 0.882          | 0          | 1          | 0.174          | 0.427          | 98.6%      | 56.7%          |
| 1.42              |                     | 6            | 0           | 0              | 0              | 0          | 0          | 0              | 0              |            | 100.0%         |

**Weight Summary**

| <b>C-lbs ai/A</b> | <b>Control Type</b> | <b>Count</b> | <b>Mean</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>Min</b> | <b>Max</b> | <b>Std Err</b> | <b>Std Dev</b> | <b>CV%</b> | <b>%Effect</b> |
|-------------------|---------------------|--------------|-------------|----------------|----------------|------------|------------|----------------|----------------|------------|----------------|
| 0                 | Negative Control    | 6            | 1.73        | 1.56           | 1.89           | 1.45       | 1.93       | 0.0643         | 0.158          | 9.13%      | 0.0%           |
| 0.00138           |                     | 6            | 1.7         | 1.49           | 1.91           | 1.47       | 1.92       | 0.0821         | 0.201          | 11.9%      | 1.69%          |
| 0.0027            |                     | 6            | 1.7         | 1.6            | 1.8            | 1.6        | 1.81       | 0.0376         | 0.092          | 5.41%      | 1.5%           |
| 0.0055            |                     | 6            | 1.68        | 1.57           | 1.79           | 1.52       | 1.8        | 0.043          | 0.105          | 6.29%      | 2.82%          |
| 0.011             |                     | 6            | 1.72        | 1.59           | 1.84           | 1.59       | 1.89       | 0.0487         | 0.119          | 6.95%      | 0.4%           |
| 0.0221            |                     | 6            | 1.63        | 1.52           | 1.73           | 1.43       | 1.73       | 0.0412         | 0.101          | 6.21%      | 5.78%          |
| 0.044             |                     | 6            | 1.57        | 1.47           | 1.67           | 1.44       | 1.7        | 0.0392         | 0.0961         | 6.11%      | 8.85%          |
| 0.088             |                     | 6            | 1.41        | 1.34           | 1.49           | 1.32       | 1.53       | 0.0282         | 0.0691         | 4.89%      | 18.1%          |
| 0.176             |                     | 6            | 1.19        | 0.952          | 1.42           | 0.864      | 1.43       | 0.0915         | 0.224          | 18.9%      | 31.2%          |
| 0.35              |                     | 6            | 0.557       | 0.442          | 0.672          | 0.44       | 0.698      | 0.0449         | 0.11           | 19.7%      | 67.7%          |
| 0.71              |                     | 4            | 0.221       | 0.196          | 0.246          | 0.198      | 0.231      | 0.00788        | 0.0158         | 7.12%      | 87.2%          |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:12 (p 3 of 3)

Test Code:

49903202 soybea | 00-7946-7335

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 280   | 324   | 396   | 391   | 363   | 441   |
| 0.00138    |                  | 313   | 407   | 343   | 308   | 374   | 350   |
| 0.0027     |                  | 320   | 372   | 374   | 300   | 446   | 359   |
| 0.0055     |                  | 355   | 382   | 387   | 324   | 405   | 346   |
| 0.011      |                  | 343   | 384   | 301   | 375   | 390   | 453   |
| 0.0221     |                  | 303   | 325   | 365   | 315   | 318   | 402   |
| 0.044      |                  | 290   | 350   | 369   | 294   | 309   | 378   |
| 0.088      |                  | 240   | 387   | 343   | 374   | 390   | 363   |
| 0.176      |                  | 345   | 234   | 343   | 273   | 280   | 308   |
| 0.35       |                  | 148   | 190   | 200   | 185   | 235   | 234   |
| 0.71       |                  | 105   |       | 117   | 102   |       | 111   |
| 1.42       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.35       |                  | 1     | 1     | 1     | 1     | 1     | 0.8   |
| 0.71       |                  | 0.6   | 0     | 0.2   | 0.8   | 0     | 1     |
| 1.42       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1.45  | 1.8   | 1.71  | 1.72  | 1.74  | 1.93  |
| 0.00138    |                  | 1.49  | 1.47  | 1.8   | 1.6   | 1.89  | 1.92  |
| 0.0027     |                  | 1.6   | 1.61  | 1.64  | 1.73  | 1.79  | 1.81  |
| 0.0055     |                  | 1.65  | 1.8   | 1.65  | 1.52  | 1.64  | 1.8   |
| 0.011      |                  | 1.59  | 1.63  | 1.76  | 1.89  | 1.63  | 1.81  |
| 0.0221     |                  | 1.43  | 1.66  | 1.63  | 1.66  | 1.66  | 1.73  |
| 0.044      |                  | 1.44  | 1.52  | 1.52  | 1.64  | 1.7   | 1.61  |
| 0.088      |                  | 1.39  | 1.39  | 1.53  | 1.4   | 1.45  | 1.32  |
| 0.176      |                  | 1.09  | 1.27  | 1.43  | 0.864 | 1.42  | 1.05  |
| 0.35       |                  | 0.698 | 0.579 | 0.667 | 0.511 | 0.447 | 0.44  |
| 0.71       |                  | 0.231 |       | 0.198 | 0.228 |       | 0.228 |
| 1.42       |                  |       |       |       |       |       |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 15:18 (p 1 of 3)

**Test Code:**

49903202 sugarb | 17-2291-8915

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                      |                 |                   |                                       |                 |                      |
|----------------------|-----------------|-------------------|---------------------------------------|-----------------|----------------------|
| <b>Batch ID:</b>     | 08-1469-4967    | <b>Test Type:</b> | Vegetative Vigor Tier II              | <b>Analyst:</b> |                      |
| <b>Start Date:</b>   | 08 Feb-16       | <b>Protocol:</b>  | OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b> |                      |
| <b>Ending Date:</b>  | 31 May-16 20:57 | <b>Species:</b>   | Beta vulgaris                         | <b>Brine:</b>   |                      |
| <b>Duration:</b>     | 113d 21h        | <b>Source:</b>    | Morgan County Seeds LLC               | <b>Age:</b>     |                      |
| <b>Sample ID:</b>    | 19-9857-3075    | <b>Code:</b>      | 49903202 sugarb                       | <b>Client:</b>  | CDM Smith - T. Nelis |
| <b>Sample Date:</b>  | 08 Feb-16       | <b>Material:</b>  | 2,4-D choline salt                    | <b>Project:</b> |                      |
| <b>Receive Date:</b> | 31 May-16 20:57 | <b>Source:</b>    | Dow AgroSciences                      |                 |                      |
| <b>Sample Age:</b>   | NA              | <b>Station:</b>   |                                       |                 |                      |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 02-1988-6836       | Height          | 0.0221      | 0.044       | 0.03118     | 12.6%       |           | Dunnnett Multiple Comparison Test  |
| 07-0679-7282       | Height          | 0.0221      | 0.044       | 0.03118     | 8.87%       |           | Williams Multiple Comparison Test  |
| 17-2211-5528       | Survival        | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 16-4849-4328       | Survival        | 0.088       | 0.176       | 0.1245      | 7.95%       |           | Mann-Whitney U Two-Sample Test     |
| 10-8502-2099       | Weight          | 0.011       | 0.0221      | 0.01559     | 20.6%       |           | Dunnett Multiple Comparison Test   |
| 06-4641-2395       | Weight          | 0.011       | 0.0221      | 0.01559     | 14.5%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>lbs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 01-1451-3031       | Height          | IC5          | 0.0123          | 0.00626        | 0.0186         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0244          | 0.0163         | 0.0335         |           |                         |
|                    |                 | IC25         | 0.0771          | 0.063          | 0.0929         |           |                         |
|                    |                 | IC50         | 0.277           | 0.221          | 0.346          |           |                         |
| 11-3583-8857       | Survival        | EC5          | 0.117           | 0.0838         | 0.141          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.133           | 0.101          | 0.157          |           |                         |
|                    |                 | EC25         | 0.165           | 0.136          | 0.19           |           |                         |
|                    |                 | EC50         | 0.21            | 0.182          | 0.243          |           |                         |
| 04-4199-1153       | Survival        | EC50         | 0.211           | 0.183          | 0.242          |           | Spearman-Kärber         |
| 04-6419-0368       | Weight          | IC5          | 0.0122          | 0.00525        | 0.0171         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0179          | 0.0123         | 0.0231         |           |                         |
|                    |                 | IC25         | 0.0343          | 0.0277         | 0.0413         |           |                         |
|                    |                 | IC50         | 0.0703          | 0.062          | 0.0798         |           |                         |

**CETIS Summary Report**
**Report Date:**

08 Jun-16 15:18 (p 2 of 3)

**Test Code:**

49903202 sugarb | 17-2291-8915

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 210  | 190     | 230     | 175 | 232 | 7.89    | 19.3    | 9.19% | 0.0%    |
| 0.00138    |                  | 6     | 230  | 215     | 245     | 210 | 248 | 5.83    | 14.3    | 6.22% | -9.28%  |
| 0.0027     |                  | 6     | 230  | 216     | 244     | 212 | 248 | 5.49    | 13.5    | 5.84% | -9.6%   |
| 0.0055     |                  | 6     | 234  | 220     | 247     | 220 | 254 | 5.21    | 12.8    | 5.45% | -11.3%  |
| 0.011      |                  | 6     | 234  | 219     | 248     | 218 | 255 | 5.53    | 13.5    | 5.8%  | -11.1%  |
| 0.0221     |                  | 6     | 201  | 189     | 213     | 189 | 217 | 4.63    | 11.3    | 5.64% | 4.28%   |
| 0.044      |                  | 6     | 190  | 182     | 198     | 176 | 197 | 3.11    | 7.61    | 4.0%  | 9.44%   |
| 0.088      |                  | 6     | 175  | 166     | 183     | 166 | 186 | 3.27    | 8.02    | 4.59% | 16.9%   |
| 0.176      |                  | 6     | 119  | 104     | 133     | 106 | 142 | 5.54    | 13.6    | 11.5% | 43.6%   |
| 0.37       |                  | 2     | 125  | 86.9    | 163     | 122 | 128 | 3       | 4.24    | 3.39% | 40.5%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean   | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%    | %Effect |
|------------|------------------|-------|--------|---------|---------|-----|-----|---------|---------|--------|---------|
| 0          | Negative Control | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.00138    |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0027     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0055     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.011      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0221     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.044      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.088      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.176      |                  | 6     | 0.667  | 0.412   | 0.921   | 0.2 | 0.8 | 0.0989  | 0.242   | 36.3%  | 33.3%   |
| 0.37       |                  | 6     | 0.0667 | 0       | 0.175   | 0   | 0.2 | 0.0422  | 0.103   | 155.0% | 93.3%   |
| 0.73       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |
| 1.46       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1.24  | 1.09    | 1.38    | 1.05  | 1.41  | 0.0549  | 0.135   | 10.9% | 0.0%    |
| 0.00138    |                  | 6     | 1.3   | 1.15    | 1.46    | 1.11  | 1.49  | 0.061   | 0.149   | 11.5% | -5.45%  |
| 0.0027     |                  | 6     | 1.26  | 1.14    | 1.38    | 1.14  | 1.47  | 0.0481  | 0.118   | 9.35% | -1.96%  |
| 0.0055     |                  | 6     | 1.2   | 1.05    | 1.36    | 1.03  | 1.4   | 0.0609  | 0.149   | 12.4% | 2.64%   |
| 0.011      |                  | 6     | 1.25  | 1.11    | 1.39    | 1.12  | 1.47  | 0.0529  | 0.13    | 10.4% | -1.2%   |
| 0.0221     |                  | 6     | 1.04  | 0.913   | 1.16    | 0.822 | 1.17  | 0.0486  | 0.119   | 11.5% | 16.0%   |
| 0.044      |                  | 6     | 0.834 | 0.73    | 0.939   | 0.682 | 0.966 | 0.0405  | 0.0993  | 11.9% | 32.4%   |
| 0.088      |                  | 6     | 0.602 | 0.496   | 0.707   | 0.48  | 0.714 | 0.041   | 0.1     | 16.7% | 51.3%   |
| 0.176      |                  | 6     | 0.177 | 0.0522  | 0.302   | 0.106 | 0.417 | 0.0485  | 0.119   | 67.2% | 85.7%   |
| 0.37       |                  | 2     | 0.131 | 0.0621  | 0.201   | 0.126 | 0.137 | 0.00545 | 0.00771 | 5.87% | 89.4%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:18 (p 3 of 3)

Test Code:

49903202 sugarb | 17-2291-8915

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 205   | 219   | 216   | 175   | 214   | 232   |
| 0.00138    |                  | 228   | 218   | 232   | 210   | 248   | 242   |
| 0.0027     |                  | 212   | 238   | 219   | 227   | 248   | 238   |
| 0.0055     |                  | 224   | 228   | 254   | 220   | 243   | 234   |
| 0.011      |                  | 255   | 220   | 218   | 239   | 234   | 235   |
| 0.0221     |                  | 204   | 189   | 210   | 198   | 217   | 189   |
| 0.044      |                  | 176   | 190   | 193   | 196   | 190   | 197   |
| 0.088      |                  | 169   | 166   | 186   | 173   | 183   | 171   |
| 0.176      |                  | 109   | 142   | 123   | 109   | 122   | 106   |
| 0.37       |                  |       |       | 122   | 128   |       |       |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 0.8   | 0.6   | 0.2   | 0.8   | 0.8   | 0.8   |
| 0.37       |                  | 0     | 0     | 0.2   | 0.2   | 0     | 0     |
| 0.73       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.46       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1.41  | 1.29  | 1.12  | 1.23  | 1.05  | 1.32  |
| 0.00138    |                  | 1.17  | 1.11  | 1.33  | 1.29  | 1.44  | 1.49  |
| 0.0027     |                  | 1.17  | 1.27  | 1.27  | 1.14  | 1.47  | 1.25  |
| 0.0055     |                  | 1.24  | 1.03  | 1.4   | 1.1   | 1.11  | 1.35  |
| 0.011      |                  | 1.47  | 1.12  | 1.15  | 1.34  | 1.22  | 1.21  |
| 0.0221     |                  | 1.12  | 0.822 | 1.02  | 1.03  | 1.17  | 1.07  |
| 0.044      |                  | 0.898 | 0.966 | 0.821 | 0.774 | 0.865 | 0.682 |
| 0.088      |                  | 0.654 | 0.48  | 0.697 | 0.714 | 0.504 | 0.561 |
| 0.176      |                  | 0.149 | 0.417 | 0.111 | 0.127 | 0.152 | 0.106 |
| 0.37       |                  |       |       | 0.137 | 0.126 |       |       |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 15:28 (p 1 of 3)

**Test Code:**

49903202 sunflo | 07-7081-5313

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 19-2121-9650        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:51  | <b>Species:</b> Helianthus annuua                      | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Johnny's Selected Seeds, ME             | <b>Age:</b>                         |
| <b>Sample ID:</b> 13-9415-0048       | <b>Code:</b> 49903202 sunflo                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:51 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 06-6847-5769       | Height          | 0.011       | 0.0221      | 0.01559     | 10.2%       |           | Dunnnett Multiple Comparison Test  |
| 03-3580-7018       | Height          | 0.011       | 0.0221      | 0.01559     | 7.41%       |           | Williams Multiple Comparison Test  |
| 10-6953-7232       | Survival        | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 11-7872-7176       | Survival        | 0.088       | 0.176       | 0.1245      | 8.33%       |           | Mann-Whitney U Two-Sample Test     |
| 13-5264-2363       | Weight          | 0.0221      | 0.044       | 0.03118     | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 09-2884-2333       | Weight          | 0.011       | 0.0221      | 0.01559     | 9.08%       |           | Mann-Whitney U Two-Sample Test     |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>        |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|----------------------|
| 18-8830-4164       | Height          | IC5          | 0.0114          | 0.00781        | 0.0146         |           | Nonlinear Regression |
|                    |                 | IC10         | 0.0172          | 0.0137         | 0.0206         |           |                      |
|                    |                 | IC25         | 0.034           | 0.0297         | 0.0385         |           |                      |
|                    |                 | IC50         | 0.0724          | 0.0669         | 0.0784         |           |                      |
| 04-2019-0824       | Survival        | EC50         | 0.153           | 0.136          | 0.172          |           | Spearman-Kärber      |
| 20-5994-4218       | Weight          | IC5          | 0.0126          | 0.0083         | 0.0158         |           | Nonlinear Regression |
|                    |                 | IC10         | 0.0171          | 0.0136         | 0.0203         |           |                      |
|                    |                 | IC25         | 0.0287          | 0.025          | 0.0325         |           |                      |
|                    |                 | IC50         | 0.0508          | 0.0467         | 0.0552         |           |                      |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:28 (p 2 of 3)

Test Code:

49903202 sunflo | 07-7081-5313

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 395  | 381     | 409     | 381 | 410 | 5.5     | 13.5    | 3.41% | 0.0%    |
| 0.00138    |                  | 6     | 402  | 391     | 412     | 389 | 417 | 4.05    | 9.91    | 2.47% | -1.73%  |
| 0.0027     |                  | 6     | 391  | 361     | 422     | 341 | 415 | 11.8    | 28.9    | 7.39% | 0.93%   |
| 0.0055     |                  | 6     | 392  | 358     | 427     | 351 | 432 | 13.4    | 32.8    | 8.35% | 0.68%   |
| 0.011      |                  | 6     | 407  | 369     | 445     | 353 | 449 | 14.7    | 35.9    | 8.83% | -3.04%  |
| 0.0221     |                  | 6     | 354  | 322     | 385     | 318 | 383 | 12.2    | 29.9    | 8.46% | 10.4%   |
| 0.044      |                  | 6     | 274  | 247     | 300     | 246 | 319 | 10.2    | 25.1    | 9.16% | 30.7%   |
| 0.088      |                  | 6     | 152  | 130     | 173     | 127 | 184 | 8.38    | 20.5    | 13.5% | 61.6%   |
| 0.176      |                  | 4     | 101  | 82.4    | 119     | 88  | 114 | 5.76    | 11.5    | 11.4% | 74.5%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.00138    |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0027     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0055     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.011      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0221     |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.044      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.088      |                  | 6     | 1    | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.176      |                  | 6     | 0.3  | 0.0107  | 0.589   | 0   | 0.6 | 0.113   | 0.276   | 91.9% | 70.0%   |
| 0.35       |                  | 6     | 0    | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |
| 0.71       |                  | 6     | 0    | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |
| 1.42       |                  | 6     | 0    | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1.77  | 1.71    | 1.84    | 1.69  | 1.85  | 0.0267  | 0.0654  | 3.69% | 0.0%    |
| 0.00138    |                  | 6     | 1.77  | 1.59    | 1.95    | 1.57  | 2.03  | 0.0683  | 0.167   | 9.46% | 0.27%   |
| 0.0027     |                  | 6     | 1.76  | 1.68    | 1.83    | 1.67  | 1.87  | 0.0287  | 0.0702  | 4.0%  | 0.96%   |
| 0.0055     |                  | 6     | 1.75  | 1.68    | 1.83    | 1.66  | 1.85  | 0.0306  | 0.075   | 4.27% | 1.16%   |
| 0.011      |                  | 6     | 1.73  | 1.57    | 1.89    | 1.5   | 1.85  | 0.0619  | 0.152   | 8.75% | 2.31%   |
| 0.0221     |                  | 6     | 1.58  | 1.35    | 1.82    | 1.35  | 1.97  | 0.0927  | 0.227   | 14.3% | 10.8%   |
| 0.044      |                  | 6     | 1.05  | 0.869   | 1.22    | 0.84  | 1.26  | 0.0686  | 0.168   | 16.1% | 41.1%   |
| 0.088      |                  | 6     | 0.358 | 0.257   | 0.46    | 0.283 | 0.538 | 0.0394  | 0.0964  | 26.9% | 79.8%   |
| 0.176      |                  | 4     | 0.187 | 0.168   | 0.206   | 0.177 | 0.204 | 0.00596 | 0.0119  | 6.36% | 89.4%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 15:28 (p 3 of 3)

Test Code:

49903202 sunflo | 07-7081-5313

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 399   | 381   | 410   | 381   | 388   | 410   |
| 0.00138    |                  | 408   | 417   | 389   | 396   | 397   | 403   |
| 0.0027     |                  | 374   | 411   | 395   | 341   | 415   | 411   |
| 0.0055     |                  | 379   | 413   | 432   | 351   | 416   | 362   |
| 0.011      |                  | 425   | 449   | 353   | 429   | 409   | 376   |
| 0.0221     |                  | 318   | 348   | 319   | 374   | 383   | 380   |
| 0.044      |                  | 260   | 319   | 277   | 246   | 263   | 277   |
| 0.088      |                  | 144   | 184   | 127   | 137   | 165   | 153   |
| 0.176      |                  | 114   | 106   |       | 95    | 88    |       |
| 0.35       |                  |       |       |       |       |       |       |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 0.2   | 0.6   | 0     | 0.6   | 0.4   | 0     |
| 0.35       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 0.71       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.42       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1.71  | 1.85  | 1.75  | 1.69  | 1.82  | 1.82  |
| 0.00138    |                  | 1.66  | 2.03  | 1.86  | 1.83  | 1.57  | 1.67  |
| 0.0027     |                  | 1.7   | 1.87  | 1.76  | 1.8   | 1.67  | 1.74  |
| 0.0055     |                  | 1.74  | 1.66  | 1.84  | 1.73  | 1.71  | 1.85  |
| 0.011      |                  | 1.59  | 1.84  | 1.83  | 1.85  | 1.5   | 1.81  |
| 0.0221     |                  | 1.55  | 1.68  | 1.59  | 1.97  | 1.37  | 1.35  |
| 0.044      |                  | 0.994 | 1.2   | 0.885 | 1.26  | 1.1   | 0.84  |
| 0.088      |                  | 0.296 | 0.538 | 0.295 | 0.283 | 0.382 | 0.355 |
| 0.176      |                  | 0.204 | 0.177 |       | 0.188 | 0.181 |       |
| 0.35       |                  |       |       |       |       |       |       |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |

**CETIS Summary Report**

**Report Date:** 08 Jun-16 21:28 (p 1 of 3)  
**Test Code:** 49903202 tomato | 19-5889-1437

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 11-7481-0368        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:57  | <b>Species:</b> Lycopersicon esculentum                | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> Sustainable Seed Co., CA                | <b>Age:</b>                         |
| <b>Sample ID:</b> 08-6064-3276       | <b>Code:</b> 49903202 tomato                           | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:57 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 06-6071-4619       | Height          | 0.0221      | 0.044       | 0.03118     | 39.1%       |           | Dunnett Multiple Comparison Test   |
| 15-5100-5062       | Height          | 0.0221      | 0.044       | 0.03118     | 27.7%       |           | Williams Multiple Comparison Test  |
| 08-5235-4933       | Survival        | 0.044       | 0.088       | 0.06223     | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 17-8795-9563       | Survival        | 0.044       | 0.088       | 0.06223     | 6.71%       |           | Mann-Whitney U Two-Sample Test     |
| 14-1019-9834       | Weight          | 0.011       | 0.0221      | 0.01559     | 24.6%       |           | Dunnett Multiple Comparison Test   |
| 09-4873-4192       | Weight          | 0.0055      | 0.011       | 0.007778    | 17.4%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 04-9359-2905       | Height          | IC5          | 0.00974         | N/A            | 0.0142         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.013           | 0.00675        | 0.0176         |           |                         |
|                    |                 | IC25         | 0.0212          | 0.0158         | 0.0269         |           |                         |
|                    |                 | IC50         | 0.0365          | 0.0309         | 0.0431         |           |                         |
| 03-3011-3426       | Survival        | EC5          | 0.0619          | 0.0447         | 0.0732         |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.0689          | 0.0527         | 0.0798         |           |                         |
|                    |                 | EC25         | 0.0825          | 0.0686         | 0.0933         |           |                         |
|                    |                 | EC50         | 0.101           | 0.0887         | 0.115          |           |                         |
| 16-6087-7817       | Survival        | EC50         | 0.101           | 0.089          | 0.115          |           | Spearman-Kärber         |
| 17-8456-4543       | Weight          | IC5          | 0.00656         | 0.00251        | 0.00862        |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0087          | 0.00639        | 0.0106         |           |                         |
|                    |                 | IC25         | 0.0139          | 0.0117         | 0.0162         |           |                         |
|                    |                 | IC50         | 0.0235          | 0.021          | 0.0262         |           |                         |

**CETIS Summary Report**

 Report Date: 08 Jun-16 21:28 (p 2 of 3)  
 Test Code: 49903202 tomato | 19-5889-1437

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)**
**ABC Labs**
**Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 329  | 262     | 396     | 225 | 382 | 26      | 63.7    | 19.4% | 0.0%    |
| 0.00138    |                  | 6     | 324  | 273     | 374     | 274 | 413 | 19.6    | 48.1    | 14.9% | 1.67%   |
| 0.0027     |                  | 6     | 372  | 307     | 437     | 298 | 463 | 25.3    | 62.1    | 16.7% | -12.9%  |
| 0.0055     |                  | 6     | 421  | 374     | 468     | 345 | 468 | 18.3    | 44.8    | 10.7% | -27.8%  |
| 0.011      |                  | 6     | 426  | 379     | 473     | 360 | 472 | 18.2    | 44.5    | 10.5% | -29.4%  |
| 0.0221     |                  | 6     | 307  | 248     | 366     | 247 | 404 | 23      | 56.3    | 18.3% | 6.63%   |
| 0.044      |                  | 6     | 102  | 70.3    | 134     | 72  | 138 | 12.4    | 30.5    | 29.8% | 68.9%   |
| 0.088      |                  | 6     | 59.5 | 55.4    | 63.6    | 56  | 65  | 1.61    | 3.94    | 6.62% | 81.9%   |
| 0.176      |                  | 1     | 41   |         |         | 41  | 41  | 0       | 0       | 0.0%  | 87.5%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean   | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%    | %Effect |
|------------|------------------|-------|--------|---------|---------|-----|-----|---------|---------|--------|---------|
| 0          | Negative Control | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.00138    |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0027     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0055     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.011      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.0221     |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.044      |                  | 6     | 1      | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%   | 0.0%    |
| 0.088      |                  | 6     | 0.667  | 0.45    | 0.883   | 0.4 | 1   | 0.0843  | 0.207   | 31.0%  | 33.3%   |
| 0.176      |                  | 6     | 0.0333 | 0       | 0.119   | 0   | 0.2 | 0.0333  | 0.0816  | 245.0% | 96.7%   |
| 0.37       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |
| 0.73       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |
| 1.46       |                  | 6     | 0      | 0       | 0       | 0   | 0   | 0       | 0       |        | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean   | 95% LCL | 95% UCL | Min    | Max    | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|--------|---------|---------|--------|--------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 2.27   | 2.12    | 2.43    | 2.15   | 2.49   | 0.0606  | 0.149   | 6.53% | 0.0%    |
| 0.00138    |                  | 6     | 2.14   | 1.96    | 2.33    | 1.91   | 2.41   | 0.0723  | 0.177   | 8.27% | 5.72%   |
| 0.0027     |                  | 6     | 2.37   | 2.16    | 2.58    | 2.05   | 2.61   | 0.0824  | 0.202   | 8.51% | -4.4%   |
| 0.0055     |                  | 6     | 2.46   | 2.18    | 2.74    | 2.05   | 2.73   | 0.109   | 0.268   | 10.9% | -8.16%  |
| 0.011      |                  | 6     | 1.99   | 1.81    | 2.18    | 1.82   | 2.26   | 0.0718  | 0.176   | 8.83% | 12.3%   |
| 0.0221     |                  | 6     | 1.29   | 0.903   | 1.67    | 0.8    | 1.71   | 0.149   | 0.366   | 28.4% | 43.4%   |
| 0.044      |                  | 6     | 0.397  | 0.27    | 0.524   | 0.242  | 0.534  | 0.0494  | 0.121   | 30.5% | 82.5%   |
| 0.088      |                  | 6     | 0.114  | 0.0949  | 0.134   | 0.0831 | 0.134  | 0.00753 | 0.0184  | 16.1% | 95.0%   |
| 0.176      |                  | 1     | 0.0886 |         |         | 0.0886 | 0.0886 | 0       | 0       | 0.0%  | 96.1%   |

**CETIS Summary Report**

**Report Date:** 08 Jun-16 21:28 (p 3 of 3)  
**Test Code:** 49903202 tomato | 19-5889-1437

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 225   | 277   | 369   | 382   | 374   | 348   |
| 0.00138    |                  | 333   | 413   | 297   | 307   | 318   | 274   |
| 0.0027     |                  | 346   | 427   | 463   | 330   | 366   | 298   |
| 0.0055     |                  | 437   | 438   | 468   | 446   | 391   | 345   |
| 0.011      |                  | 360   | 472   | 391   | 457   | 460   | 416   |
| 0.0221     |                  | 271   | 404   | 297   | 286   | 247   | 339   |
| 0.044      |                  | 115   | 72    | 134   | 72    | 83    | 138   |
| 0.088      |                  | 57    | 64    | 58    | 65    | 56    | 57    |
| 0.176      |                  |       |       |       | 41    |       |       |
| 0.37       |                  |       |       |       |       |       |       |
| 0.73       |                  |       |       |       |       |       |       |
| 1.46       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 0.6   | 0.6   | 0.8   | 0.4   | 0.6   |
| 0.176      |                  | 0     | 0     | 0     | 0.2   | 0     | 0     |
| 0.37       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 0.73       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.46       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4  | Rep 5  | Rep 6 |
|------------|------------------|-------|-------|-------|--------|--------|-------|
| 0          | Negative Control | 2.21  | 2.19  | 2.15  | 2.17   | 2.49   | 2.43  |
| 0.00138    |                  | 2.41  | 1.91  | 2.2   | 2.24   | 2.03   | 2.07  |
| 0.0027     |                  | 2.61  | 2.44  | 2.53  | 2.27   | 2.33   | 2.05  |
| 0.0055     |                  | 2.73  | 2.48  | 2.51  | 2.73   | 2.05   | 2.26  |
| 0.011      |                  | 1.87  | 2.26  | 1.98  | 2.15   | 1.88   | 1.82  |
| 0.0221     |                  | 1.7   | 1.71  | 1.27  | 1      | 0.8    | 1.24  |
| 0.044      |                  | 0.534 | 0.242 | 0.512 | 0.297  | 0.459  | 0.337 |
| 0.088      |                  | 0.127 | 0.117 | 0.134 | 0.12   | 0.0831 | 0.104 |
| 0.176      |                  |       |       |       | 0.0886 |        |       |
| 0.37       |                  |       |       |       |        |        |       |
| 0.73       |                  |       |       |       |        |        |       |
| 1.46       |                  |       |       |       |        |        |       |

**CETIS Summary Report****Report Date:**

08 Jun-16 18:44 (p 1 of 3)

**Test Code:**

49903202 wheat | 06-9750-5478

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs**

|                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <b>Batch ID:</b> 03-6155-9673        | <b>Test Type:</b> Vegetative Vigor Tier II             | <b>Analyst:</b>                     |
| <b>Start Date:</b> 08 Feb-16         | <b>Protocol:</b> OCSPP 850.4150 Plant Vegetative Vigor | <b>Diluent:</b>                     |
| <b>Ending Date:</b> 31 May-16 20:52  | <b>Species:</b> Triticum aestivum                      | <b>Brine:</b>                       |
| <b>Duration:</b> 113d 21h            | <b>Source:</b> L.A. Hearne Company                     | <b>Age:</b>                         |
| <b>Sample ID:</b> 11-2655-4137       | <b>Code:</b> 49903202 wheat                            | <b>Client:</b> CDM Smith - T. Nelis |
| <b>Sample Date:</b> 08 Feb-16        | <b>Material:</b> 2,4-D choline salt                    | <b>Project:</b>                     |
| <b>Receive Date:</b> 31 May-16 20:52 | <b>Source:</b> Dow AgroSciences                        |                                     |
| <b>Sample Age:</b> NA                | <b>Station:</b>  |                                     |

**Batch Note:** 2,4-D Choline Salt + Glyphosate DMA**Comparison Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>NOEL</b> | <b>LOEL</b> | <b>TOEL</b> | <b>PMSD</b> | <b>TU</b> | <b>Method</b>                      |
|--------------------|-----------------|-------------|-------------|-------------|-------------|-----------|------------------------------------|
| 21-2687-4007       | Height          | 0.044       | 0.088       | 0.06223     | 8.56%       |           | Dunnnett Multiple Comparison Test  |
| 11-2958-0046       | Height          | 0.044       | 0.088       | 0.06223     | 6.1%        |           | Williams Multiple Comparison Test  |
| 01-4409-9234       | Survival        | 0.088       | 0.176       | 0.1245      | NA          |           | Jonckheere-Terpstra Step-Down Test |
| 17-1468-6629       | Survival        | 0.088       | 0.176       | 0.1245      | 12.9%       |           | Mann-Whitney U Two-Sample Test     |
| 00-7443-5846       | Weight          | 0.044       | 0.088       | 0.06223     | 19.3%       |           | Dunnett Multiple Comparison Test   |
| 04-3804-2596       | Weight          | 0.044       | 0.088       | 0.06223     | 13.8%       |           | Williams Multiple Comparison Test  |

**Point Estimate Summary**

| <b>Analysis ID</b> | <b>Endpoint</b> | <b>Level</b> | <b>Ibs ai/A</b> | <b>95% LCL</b> | <b>95% UCL</b> | <b>TU</b> | <b>Method</b>           |
|--------------------|-----------------|--------------|-----------------|----------------|----------------|-----------|-------------------------|
| 00-6477-6007       | Height          | IC5          | 0.0171          | 0.0069         | 0.0278         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0332          | 0.0197         | 0.0484         |           |                         |
|                    |                 | IC25         | 0.1             | 0.0779         | 0.126          |           |                         |
|                    |                 | IC50         | 0.343           | 0.259          | 0.454          |           |                         |
| 21-3910-5751       | Survival        | EC5          | 0.0836          | 0.0572         | 0.106          |           | Linear Regression (MLE) |
|                    |                 | EC10         | 0.101           | 0.0736         | 0.124          |           |                         |
|                    |                 | EC25         | 0.139           | 0.111          | 0.164          |           |                         |
|                    |                 | EC50         | 0.197           | 0.167          | 0.233          |           |                         |
| 15-0049-3570       | Survival        | EC50         | 0.193           | 0.164          | 0.227          |           | Spearman-Kärber         |
| 06-6535-0286       | Weight          | IC5          | 0.0101          | N/A            | 0.0201         |           | Nonlinear Regression    |
|                    |                 | IC10         | 0.0194          | 0.00784        | 0.0331         |           |                         |
|                    |                 | IC25         | 0.0576          | 0.0376         | 0.0832         |           |                         |
|                    |                 | IC50         | 0.194           | 0.143          | 0.262          |           |                         |

**CETIS Summary Report**

Report Date:

08 Jun-16 18:44 (p 2 of 3)

Test Code:

49903202 wheat | 06-9750-5478

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Summary**

| C-lbs ai/A | Control Type     | Count | Mean | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 467  | 438     | 495     | 420 | 499 | 11.1    | 27.2    | 5.82% | 0.0%    |
| 0.00138    |                  | 6     | 455  | 421     | 490     | 405 | 496 | 13.5    | 33.2    | 7.28% | 2.39%   |
| 0.0027     |                  | 6     | 457  | 435     | 479     | 427 | 490 | 8.62    | 21.1    | 4.62% | 2.07%   |
| 0.0055     |                  | 6     | 454  | 445     | 463     | 444 | 466 | 3.51    | 8.59    | 1.89% | 2.61%   |
| 0.011      |                  | 6     | 465  | 434     | 496     | 424 | 497 | 12.1    | 29.6    | 6.37% | 0.39%   |
| 0.0221     |                  | 6     | 462  | 448     | 476     | 446 | 478 | 5.57    | 13.7    | 2.96% | 0.97%   |
| 0.044      |                  | 6     | 478  | 458     | 498     | 456 | 500 | 7.79    | 19.1    | 3.99% | -2.47%  |
| 0.088      |                  | 6     | 301  | 263     | 339     | 258 | 342 | 14.6    | 35.9    | 11.9% | 35.5%   |
| 0.176      |                  | 4     | 262  | 224     | 300     | 246 | 297 | 12.1    | 24.1    | 9.21% | 43.8%   |
| 0.35       |                  | 4     | 269  | 241     | 297     | 247 | 286 | 8.86    | 17.7    | 6.6%  | 42.4%   |

**Survival Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min | Max | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-----|-----|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.00138    |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0027     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0055     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.011      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.0221     |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.044      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.088      |                  | 6     | 1     | 1       | 1       | 1   | 1   | 0       | 0       | 0.0%  | 0.0%    |
| 0.176      |                  | 6     | 0.4   | 0.00177 | 0.798   | 0   | 0.8 | 0.155   | 0.379   | 94.9% | 60.0%   |
| 0.35       |                  | 6     | 0.233 | 0.027   | 0.44    | 0   | 0.4 | 0.0803  | 0.197   | 84.3% | 76.7%   |
| 0.71       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |
| 1.42       |                  | 6     | 0     | 0       | 0       | 0   | 0   | 0       | 0       |       | 100.0%  |

**Weight Summary**

| C-lbs ai/A | Control Type     | Count | Mean  | 95% LCL | 95% UCL | Min   | Max   | Std Err | Std Dev | CV%   | %Effect |
|------------|------------------|-------|-------|---------|---------|-------|-------|---------|---------|-------|---------|
| 0          | Negative Control | 6     | 0.539 | 0.498   | 0.581   | 0.472 | 0.594 | 0.0161  | 0.0395  | 7.33% | 0.0%    |
| 0.00138    |                  | 6     | 0.505 | 0.437   | 0.573   | 0.411 | 0.614 | 0.0265  | 0.0649  | 12.9% | 6.32%   |
| 0.0027     |                  | 6     | 0.535 | 0.482   | 0.588   | 0.467 | 0.605 | 0.0207  | 0.0506  | 9.47% | 0.82%   |
| 0.0055     |                  | 6     | 0.558 | 0.465   | 0.65    | 0.416 | 0.653 | 0.0361  | 0.0883  | 15.8% | -3.47%  |
| 0.011      |                  | 6     | 0.488 | 0.45    | 0.525   | 0.442 | 0.533 | 0.0145  | 0.0356  | 7.3%  | 9.51%   |
| 0.0221     |                  | 6     | 0.511 | 0.457   | 0.565   | 0.419 | 0.566 | 0.021   | 0.0514  | 10.0% | 5.19%   |
| 0.044      |                  | 6     | 0.516 | 0.494   | 0.538   | 0.49  | 0.542 | 0.00868 | 0.0213  | 4.12% | 4.26%   |
| 0.088      |                  | 6     | 0.256 | 0.175   | 0.337   | 0.167 | 0.375 | 0.0316  | 0.0774  | 30.2% | 52.5%   |
| 0.176      |                  | 4     | 0.287 | 0.1     | 0.474   | 0.174 | 0.435 | 0.0587  | 0.117   | 40.9% | 46.7%   |
| 0.35       |                  | 4     | 0.229 | 0.11    | 0.348   | 0.169 | 0.338 | 0.0374  | 0.0748  | 32.7% | 57.5%   |

**CETIS Summary Report**

Report Date:

08 Jun-16 18:44 (p 3 of 3)

Test Code:

49903202 wheat | 06-9750-5478

**OCSPP 850.4150 Terrestrial Plant Tier II (Vegetative Vigor)****ABC Labs****Height Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 480   | 499   | 479   | 466   | 455   | 420   |
| 0.00138    |                  | 496   | 486   | 458   | 437   | 450   | 405   |
| 0.0027     |                  | 449   | 454   | 469   | 490   | 452   | 427   |
| 0.0055     |                  | 452   | 461   | 466   | 446   | 457   | 444   |
| 0.011      |                  | 497   | 484   | 474   | 477   | 432   | 424   |
| 0.0221     |                  | 469   | 453   | 451   | 478   | 446   | 475   |
| 0.044      |                  | 487   | 500   | 496   | 458   | 471   | 456   |
| 0.088      |                  | 339   | 342   | 305   | 299   | 263   | 258   |
| 0.176      |                  | 259   |       | 297   | 246   |       | 246   |
| 0.35       |                  |       | 286   | 280   |       | 247   | 262   |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |

**Survival Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.00138    |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0027     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0055     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.011      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.0221     |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.044      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.088      |                  | 1     | 1     | 1     | 1     | 1     | 1     |
| 0.176      |                  | 0.8   | 0     | 0.2   | 0.6   | 0     | 0.8   |
| 0.35       |                  | 0     | 0.2   | 0.4   | 0     | 0.4   | 0.4   |
| 0.71       |                  | 0     | 0     | 0     | 0     | 0     | 0     |
| 1.42       |                  | 0     | 0     | 0     | 0     | 0     | 0     |

**Weight Detail**

| C-lbs ai/A | Control Type     | Rep 1 | Rep 2 | Rep 3 | Rep 4 | Rep 5 | Rep 6 |
|------------|------------------|-------|-------|-------|-------|-------|-------|
| 0          | Negative Control | 0.551 | 0.594 | 0.533 | 0.543 | 0.541 | 0.472 |
| 0.00138    |                  | 0.498 | 0.49  | 0.519 | 0.411 | 0.497 | 0.614 |
| 0.0027     |                  | 0.509 | 0.467 | 0.578 | 0.605 | 0.541 | 0.509 |
| 0.0055     |                  | 0.416 | 0.589 | 0.653 | 0.506 | 0.635 | 0.549 |
| 0.011      |                  | 0.533 | 0.48  | 0.522 | 0.457 | 0.442 | 0.492 |
| 0.0221     |                  | 0.513 | 0.521 | 0.498 | 0.549 | 0.419 | 0.566 |
| 0.044      |                  | 0.512 | 0.496 | 0.542 | 0.518 | 0.539 | 0.49  |
| 0.088      |                  | 0.375 | 0.321 | 0.223 | 0.243 | 0.167 | 0.207 |
| 0.176      |                  | 0.214 |       | 0.435 | 0.326 |       | 0.174 |
| 0.35       |                  |       | 0.338 | 0.169 |       | 0.196 | 0.214 |
| 0.71       |                  |       |       |       |       |       |       |
| 1.42       |                  |       |       |       |       |       |       |